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Students' perceptions and experiences of anxiety in an online collaborative project



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Thesis presented in partial fulfilment of the
requirements for the degree of Master of Research
in Educational Technology at
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Abstract

This study explored students' perceptions and experiences of anxiety in an online collaborative project. Using a mixed methods approach, data derived from an online survey of students from the UK Open University ($n=76$) followed by purposefully sampled semi-structured interviews among survey respondents who agreed to be interviewed ($n=11$). The results revealed that: a) anxiety was a commonly experienced emotion among survey respondents, with many perceiving these feelings to be greater before or at the start of the collaborative project and then gradually decreasing throughout; b) anxiety derived from various sources which were all related to 'uncertainty'; c) different learners perceived anxiety to have facilitative, debilitating, and neutral impacts on their participation and performance in the collaborative activity; d) learners used a range of coping strategies in order to manage anxiety, with problem-focused coping being more frequently reported than either emotion-focused coping or avoidance coping strategies; and e) getting to 'know' participants before the start of the collaborative project and being able to express and share feelings and emotions were seen as important for supporting anxious learners. Recommendations, aimed at reducing feelings of anxiety and improving learner experience in online collaborative projects, are discussed and future research in this field is suggested.

Keywords: anxiety, online collaborative learning, distance learning

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1. Aims and Objectives

1.1 Introduction

Online learning in higher education (HE) has grown significantly in recent years, with increasing numbers of learners choosing to study using this mode of learning (Barkley et al., 2014). The methods used to deliver these programs are also going through an evolution. Whilst early online instruction adopted highly teacher-centred approaches (i.e. one way transmission of knowledge from teacher to student), a greater emphasis is now placed on using more learner-centred models (i.e. active learning through interaction with fellow students) (Barkley et al., 2014). These changes reflect reforms in educational policy aimed at improving the quality of teaching and learning in HE (e.g. the recent Teaching Excellence Framework in the United Kingdom). They also aim to equip learners with a range of employability skills, such as teamwork competencies, creative and critical thinking, and collaboration skills, which are seen as essential for working in the 21st century 'knowledge age' (Binkley et al., 2012).

The use of online collaborative learning methods has now been adopted by many distance learning institutions. At the Open University (OU) in the United Kingdom (UK), for example, this approach is advocated and used in many of their online courses (Rienties and Toetenel, 2016; Cross et al., 2012). As Haresnape (2015, p.20) states, 'The prevailing learner-centred approach at the Open University uses ICT to encourage active exploration, collaboration and reflection, in an attempt to build understanding'. At the centre of such an approach is communication. And the use of synchronous (e.g. videoconferencing) and asynchronous (e.g. forums and wikis) tools allow online students to interact with

each other, work in teams, share ideas, provide peer feedback, and solve problems together. The resulting sense of belonging and community that such collaboration can foster is a key goal for many educators due to the positive impacts it can have on learner motivation, confidence, and satisfaction (Kear, 2011).

Despite the benefits of using online collaborative methods, online learning environments can seem cold, unfriendly, and impersonal when compared to face-to-face learning environments (e.g. due to the lack of facial expression and other cues) (Vrasidas and Zembylas, 2003). Learners can also experience a sense of ambivalence when learning in online groups due to factors such as working in an unknown environment, communicating with 'strangers', time-lags between sending and receiving messages, and uncertainty over the commitment demands required when taking part (Kear, 2011; Donelan et al., 2010; Brindley et al., 2009). Recent research has also highlighted that learners in online collaborative settings can experience a range of negative emotions when undertaking this form of learning. For example, Capdeferro and Romero (2012) have shown that learners can experience increased levels of frustration in these settings, and Allan and Lawless (2003) described the stress caused by collaborating with others online. Due to the deleterious impacts negative emotions can have on motivation, learning, and academic achievement, further exploration has been encouraged to gain a greater understanding of the role of these emotions within online collaborative settings (Capdeferro and Romero, 2012; Allan and Lawless, 2003).

One of the most frequently cited negative emotions associated with online learning is anxiety (Angelaki and Mavroidis, 2013; O'Regan, 2003). The complexities of online group work, such as interacting with others, negotiating roles

and responsibilities, and working to achieve individual and team goals, are far different from traditional, teacher-centred, online learning approaches. Numerous studies have shown that anxiety experienced in online collaboration can stem from a multitude of sources related to working in a team, such as interacting with others, fear of being judged, and worry of letting others down (Symeonides and Childs, 2015; Duncan et al., 2013; Allan and Lawless, 2003). The majority of studies reporting these findings, however, have not specifically focussed on anxiety but have rather investigated emotions in general or explored student experiences of online collaboration more broadly. Due to the scarce research investigating anxiety in online collaborative contexts, a more in-depth exploration of the sources of this emotion is needed. Questions regarding how anxiety influences participation and performance in online collaborative learning, how students cope with this emotion, and what support could be provided to help anxious learners, have also not been answered. Research exploring these areas would have a significant impact on our current knowledge of anxiety in online collaborative learning as well as help tutors and course designers create anxiety-reduced collaborative learning environments.

1.2 Aims and Objectives

The primary aim of this present study was, therefore, to investigate students' perceptions and experiences of anxiety in an online collaborative project. In order to achieve this, the objectives of the study were as follows: a) to identify the causes of anxiety; b) to examine the impact of anxiety on student participation and performance; c) to understand how students cope with anxiety; and d) to explore how students experiencing anxiety could be supported further.

2. Literature Review

This literature review is split into three main parts. Firstly, the role of emotions in learning, online learning environments, and online collaboration will be discussed. Secondly, the concept of anxiety will be outlined and previous literature related to this emotion in online and online collaborative learning contexts will be explored. And thirdly, the research questions that this study aims to answer will be presented.

2.1 Emotion

2.1.1 Emotion and Learning

Emotion has often been thought of as antithetical to thinking and learning (Cleveland-Innes and Campbell, 2012). However, within the last two decades a 'reconceptualisation of emotions' in the educational process has occurred (Rienties and Rivers, 2014, p.2). The traditional notion of a cognitive versus emotional divide has changed, as both emotion and cognition are seen to be inextricably linked and essential for learning (McLaughlin, 2003). Emotions are now viewed as having a vital role in student motivation, self-regulation and academic achievement (Rienties and Rivers, 2014).

Understanding and defining what is meant by the term emotion is an extremely difficult task. The lack of a clear definition for this complex phenomenon, as well as the multiple perspectives it has been studied from, have played a large part in the confusion, and negativity, often surrounding emotions and effective

teaching and learning (Cleveland-Innes and Campbell, 2012). Artino et al. (2012, p.e149) define emotion¹ as:

‘...an acute, intense, and typically brief psycho-physiological change that results from a response to a meaningful situation in an individual’s environment.’

According to Lazarus’ (1991) Cognitive-Motivational-Relational theory (CMRT), when faced with an emotional encounter (or meaningful situation) the emotions experienced by an individual will depend on how he or she cognitively evaluates (i.e. appraises) the situation in relation to their personal well-being. More specifically, Lazarus (1991) distinguishes between *primary* (potential relevance of encounter in relation to personal goals; whether the encounter is appraised as beneficial, harmful or threatening) and *secondary* (perceived options and prospects for coping with the event) appraisals, and states that these processes result in the identification of a core relational theme² that is distinct to each specific emotion (see Lazarus, 1991, for a detailed overview of CMRT). Lazarus (1991), like many emotional theorists (e.g. Pekrun et al., 2002), categorises emotions by their valance, i.e. whether they are positive or negative³.

In academic environments, positive emotions, such as pride, joy and excitement, have been found to be associated with: greater satisfaction and

¹ The term emotion is often confused, or used interchangeably, with the terms affect and mood. Emotion and mood, however, are usually seen as sub-sets of affect. Moods differ from emotion as they are generally seen to be less intense and last for a longer duration (Artino et al., 2012).

² A core relational theme summarises the relationship between the person and the environment in relation to a particular type of harm or benefit (Lazarus, 1991). For example, the core relational theme of anxiety is ‘ambiguous danger’.

³ There is no agreed upon number of emotions and differences in numbers and types exists between emotional theorists.

engagement in learning environments; enhanced abilities to envision successful learning outcomes; greater self-regulation; the development of creative ways of thinking; and the employment of more advanced learning strategies (D'Errico et al., 2016; Pekrun et al., 2002, 2011). In contrast, negative emotions, such as anxiety and anger, may result in a less fulfilling learning experience with lower achievement (Valiente et al., 2012). The view that all positive emotions are 'good' and all negative emotions are 'bad' is, however, overly simplistic. Research has shown that positive emotions do not always have beneficial impacts on learning, motivation, and performance, and negative emotions do not always have detrimental effects (Pekrun, 2006; Lazarus, 2000). For instance, a negative emotion such as anger can have facilitating impacts on learner engagement, which can lead to enhanced learning and performance (Pekrun, 2006).

2.1.2 Emotion and Online Learning

Online learning has often been viewed as less emotional, more impersonal, and lacking in emotional richness (e.g. lack of body language, facial expressions, and gestures) when compared to face-to-face contexts (Vrasidas and Zembylas, 2003; Rice and Love, 1987). Recently, however, research has shown that emotions are commonly experienced in online education. For instance, both positive (e.g. joy enthusiasm, excitement, pride) and negative (e.g. anxiety, fear, and stress) emotions have been reported by students in online courses (e.g. Symeonides and Childs, 2015; Zembylas, 2008). It has been claimed that there are few differences between the emotions experienced in online settings and those experienced in face-to face contexts (Daniels and Stupnisky, 2012). It may, therefore, not be surprising that emotions are thought to play a powerful role in the social and

academic aspects of online education (Symeonides and Childs, 2015; Artino, 2012).

2.1.3 Emotion and Online Collaborative Learning

With pedagogical shifts in teaching and learning, a greater emphasis is now placed on collaborative learning methods in online contexts (Barkley et al., 2014). These approaches, based on social constructivist theories of learning, encourage students to construct knowledge through interaction, co-construction, and negotiation with their peers (Chiong and Jovanovic, 2012); instead of simply acquiring knowledge through transmission from their lecturer. Harasim (2012, p.88) defines online collaborative learning as:

‘...educational applications that emphasize collaborative discourse and knowledge building by the Internet; learners work together online to identify and advance issues of understanding, and apply their new understanding and analytical terms and tools to solving problems, constructing plans or developing explanations for phenomena.’

The pedagogical advantages of this constructivist approach have been discussed at length elsewhere (e.g. see Barkley et al., 2014); briefly, however, online collaboration has been found to have a positive influence on learning outcomes (Means et al., 2009) and is seen as important for developing employability and twenty-first century skills (Webb, 2014).

The addition of collaboration (i.e. whole group discussion) or group work (i.e. discussion and collaboration in smaller groups) to the online environment increases

the complexity of learning situations and despite its benefits this may result in an increased cognitive load which could impede learning (Kear and Heap, 2007). Furthermore, the group work element of online learning can provide an additional source of emotion itself. For instance, interaction between peers may evoke positive emotions, such as enjoyment and enthusiasm, as well as induce negative emotions, such as anxiety and fear (McConnell, 2005; O'Regan, 2003). Research has shown that many aspects of online collaboration can elicit negative emotions, for instance, personality clashes (Donelan and Kear, 2017), social comparison in messages (Light et al., 2000), and 'free riders' (Capdeferro and Romero, 2012). Furthermore, intense emotions, such as increased levels of anxiety, can be also evoked due to the unfamiliar nature of these learning environments (especially in those who have not studied using this approach previously).

2.2 Anxiety

2.2.1 Conceptualisation of Anxiety

Anxiety⁴ is considered to be a negative emotion and has been of great interest to educational researchers' for decades due to its potential detrimental impacts on the learning process. Spielberger (1972, p.482) defines anxiety as:

'...an unpleasant emotional state or condition which is characterized by subjective feelings of tension, apprehension, and worry, and by activation or arousal of the automatic nervous system'

⁴ Anxiety has often been used interchangeably with other emotional states such as 'stress' and 'worry' throughout literature, with these terms often being used to refer to the same phenomenon (Putwain, 2007).

As with all emotions, anxiety is subjective to each individual, and there is great inter-individuality in the way we appraise and react to anxious encounters. In relation to Lazarus' (1991) CMRT, anxiety is evoked if an individual appraises a situation to be threatening to their values, goals, and beliefs, in ambiguous conditions (Lazarus, 1991). According to Lazarus (1991), this emotion is future oriented (i.e. it is anticipatory emotion about events that have not yet taken place) and occurs when there is no obvious agent of threat (i.e. absence of blame).

Although various types of anxiety have been described, most theories have drawn a distinction between trait and state anxiety. Trait anxiety can be viewed as a stable personality dimension predisposing individuals to interpret a situation as threatening (Spielberger, 1966). Whereas state anxiety is a situational, subjective emotional state and is not an enduring feature of an individual's personality (Spielberger, 1966). Anxiety evoked from taking part in an online collaborative project, could therefore be seen as a type of state anxiety.

Two components of state anxiety have been identified in literature: worry and emotionality (Morris et al., 1981)⁵. The worry component of anxiety refers to cognitive aspects. For example, negative thoughts about the situation at hand and potential consequences (Morris et al., 1981). In response to a threatening situation, an individual may have worrying thoughts about their inability to deal with the situation and the immediate danger that they may face. The emotionality component concerns indications of autonomic arousal (e.g. increased heart rate and sweaty palms) and unpleasant feelings of tension and nervousness (Morris et al., 1981).

⁵ These two components are often referred to cognitive and somatic anxiety.

2.2.2 Anxiety in Online and Online Collaborative Learning

Evidence highlighting that anxiety is an emotion experienced by learners in online learning environments has derived from both quantitative and qualitative approaches. Predominantly, enquiry into anxiety in online and distance learning contexts has focused on computer anxiety (i.e. fear of using, or possibility of using, a computer) (e.g. Saadé and Kira, 2009), internet anxiety (i.e. fear or apprehension of using the internet) (e.g. Thatcher et al., 2007), computer-mediated communication anxiety (i.e. the fear or apprehension of information technology to communicate with others) (e.g. Fuller et al., 2016), and more recently, wiki anxiety (i.e. fear or apprehension of using or editing a wiki) (e.g. Cowan and Jack, 2014). Research into these areas has primarily adopted a positivist approach, using various self-report measures to examine learners' anxiety when operating, or learning how to operate, computers, the internet, and various types of computer-mediated communication.

Although used to a lesser extent, qualitative methods, such as interviews and emotional journals, and mixed methods approaches, such as self-administered surveys using both open and closed questions, have also described experiences of anxiety in online and online collaborative learning settings. Such research has often had the intention of exploring specific emotions (e.g. Anxiety: Bolliger and Halupa, 2012; Frustration: Capdeferro and Romero, 2012; Stress: Allan and Lawless, 2003), emotions in general (e.g. Zembylas, 2008; O'Regan, 2003), or describing students' overall experiences of learning in these settings (Donelan and Kear, 2017; Potts, 2011). In the remainder of this section, the literature relevant to anxiety in online collaborative contexts will be examined. This will focus on the following

areas: reasons for anxiety; impacts of anxiety on learner participation and performance; how students cope with anxiety; and the ways anxiety can be reduced and anxious learners can be supported.

Reasons for anxiety

Studies that have discussed feelings of anxiety in online distance learning environments have often identified the sources of this emotion. After interviewing 11 online learners, O'Regan (2003) found that anxiety was caused by a number of factors in this setting. These included: working in an unknown environment; delays in the online system; using the internet; and exposing work to an unknown audience. Zembylas (2008) found similar findings from a group of 20 learners taking part in an online master's level program at the OU of Cyprus. The unknown study methodology (learners were new to online learning), use of the library system, the internet, and the amount of time required to study, were identified as the main origins of anxiety. Although these studies have provided valuable knowledge about the reasons for anxiety in online distance learning environments, they were not specifically aimed at exploring collaborative contexts.

Investigation into online collaborative environments has shown that anxiety can stem from various aspects of group work and collaboration, such as: judgement from peers (Symeonides and Childs, 2015; Duncan et al., 2013); being misinterpreted (Symeonides and Childs, 2015); talking 'publically' in an open forum (Symeonides and Childs, 2015); low self-efficacy (Hartnett, 2015); delays in messages being answered or acknowledged (Allan and Lawless, 2003); letting other students down (Allan and Lawless, 2003); reduced flexibility and convenience of online study (Brindley et al., 2009); worries over completing tasks and overall

achievement (Yoshida et al., 2013); and being dependent on others (Allan and Lawless, 2003). The inclusion of assessment (e.g. group and individual grading) in the collaborative learning process has also been shown to cause tension between individual endeavour and group requirements (Macdonald, 2003) leading to worry about how own marks could be affected by others (Donelan and Kear, 2017). It is clear from the existing literature that anxiety can stem from various sources in online collaborative learning. However, an in-depth exploration of an assessed, online, collaborative activity could provide further understanding of the origins of this emotion.

Impact of anxiety on participation and performance

Investigation into how anxiety impacts participation and overall performance in online collaboration is extremely limited. It is often perceived that anxiety will have negative and debilitating impacts on the learning process, however, the idea that this emotion can also have positive and facilitative effects has been discussed for numerous decades (e.g. Alpert and Haber, 1960). Falkner et al. (2013) have provided evidence for such facilitative effects in a face-to-face collaborative context. After interviewing 10 undergraduate students from a Computer Science course, it was revealed that a number of learners perceived anxiety to have a positive impact when completing collaborative learning activities. The facilitative properties of anxiety are thought to help individuals cope with new tasks and lead to enhanced levels of effort and persistence (Strack et al., 2017), thus aiding learning and achievement. Debilitative anxiety, on the other hand, is associated with increased negative expectations and reduced academic performance (Strack et al., 2017).

In a study by Oliveira et al. (2011), anxiety was found to be one of the patterns associated with less successful online collaborative working. However, whether anxiety resulted in a lack of success or whether a lack of success caused anxiety was not highlighted by the authors. Johnson and Johnson (2009) also suggest that low levels of anxiety are needed for promotive interaction (i.e. individuals encouraging each other's efforts to help the group complete tasks and reach goals) in cooperative learning. A search of literature failed to identify any studies adopting an interpretivist approach that have reported how anxiety impacts learners' participation and performance when undertaking an online collaborative learning activity. Further enquiry into this area will help gain a more comprehensive understanding of how anxiety impacts the learning process and academic achievement in an online collaborative environment.

Coping with anxiety

During the secondary appraisal of the CMRT, Lazarus (1991) suggests that an individual will evaluate the controllability of the emotion-provoking encounter and his/her resources and options available for coping with the situation. How the emotion encounter is appraised can result in different coping responses. Lazarus and Folkman (1984, p.141) define coping as '...constantly changing cognitive and behavioural efforts to manage specific external and/ or internal demands that are appraised as taxing or exceeding the resources of the person'. Although a wide range of coping strategies have been identified, these can be categorised into three broad higher order coping dimensions: problem-focused; emotion-focused, and avoidance coping (Endler and Parker, 1990; Lazarus and Folkman, 1984). Problem-focused strategies are aimed at actively managing or resolving the situation (e.g. seeking information, increasing efforts, planning, and managing

priorities). Emotion-focused coping is aimed at regulating or dealing with the emotional distress in the mind (e.g. seeking emotional support, positive reframing, venting, acceptance, and wishful thinking). Avoidance coping involves behavioural (e.g. removing self from situation) and psychological (e.g. denial, blocking, or mental distancing) efforts to avoid stressful situations.

In online learning contexts, very few studies have explicitly investigated coping responses of learners. Symeonides and Childs (2015) and Zembylas (2008) described how the use of peer support helped students manage anxiety. For instance, Symeonides and Childs (2015) highlighted that one learner coped with trepidation by gaining emotional support from a fellow learner during stressful times throughout the academic year. And another learner found reading fellow student's self-discourses of their struggles on the online course helpful in alleviating anxiety. Other coping responses found by Symeonides and Childs (2015) included: retreating from the online environment; only posting information that was 'worth sharing' on the forum; and 'forcing' oneself to interact with others. Seeking tutor support has also been described by other scholars as a coping response used by learners in online environments (Angelaki and Mavroidis, 2013). However, reluctance to seek emotional and psychological support from tutors has also been found due to not wanting to trouble tutors or fear of personal embarrassment (Symeonides and Childs, 2015; Xu et al., 2014). Having a greater understanding of how students cope with anxiety in online collaboration may greatly aid the support that can be offered to these individuals.

Reducing anxiety

A number of scholars have provided suggestions to help reduce negative emotions, such as anxiety, in online learning contexts (e.g. Jung et al., 2015) . A common theme among these is the creation of a supportive learning environment. Zembylas (2008) recommends that fostering quality communication with fellow learners (student-to-student communication) and tutors (student-to-tutor communication) will help reduce negative emotions associated with online learning. This is a view shared by Allan and Lawless (2003) who believe that establishing good relationships and trust between learners is essential in creating a 'safe' learning culture. To help achieve such relationships, ice-breaker activities and face-to-face meetings, if possible, before or at the start of the learning experience are seen as beneficial (Symeonides and Childs, 2015; Allan and Lawless, 2003). Social presence, defined as '...the degree to which a person is perceived as a 'real person' in mediated communication' (Gunawardena and Zittle, 1997, p.9), could also be further developed by creating personal profiles (e.g. with photos and short resumes) (Kear et al., 2014) and encouraging meetings through video-conferencing or social media such as Facebook (Jung et al., 2015).

Encouraging learners to express and share their feelings and emotions is also advocated by many scholars (e.g. through emotional journals or in 'safe spaces'). Xu et al. (2014) believe that this will help learners better support one another and cope with the negative emotions experienced in online learning settings. Learners will also be able to share successful coping strategies with their peers. Other suggestions to help reduce negative emotions include: encouraging the use of emphatic talk amongst learners (i.e. taking greater care when communicating and ensuring responses are appropriate) (Allan and Lawless,

2003); ensuring tutors act as facilitators (Symeonides and Childs, 2015); and using worked examples with novice learners (Jung et al., 2015). Although scholars have suggested numerous strategies to help reduce negative emotions experienced in online learning environments, gaining a student perspective of how anxious learners could be supported further in online collaboration may yield new findings that could be of great benefit to these students.

2.3 Research Questions

From the above literature review, it is clear that there is currently a lack of research exploring anxiety in online collaborative learning. New insight in this area will be of great value to educators and institutions who have adopted, or who are looking to adopt, this pedagogical approach. It will also advance knowledge in the growing area of emotion in online learning, the need for which has been advocated by numerous scholars (e.g. Garrison, 2017; Artino, 2012; Zembylas, 2008). The overarching research question of this study was: What are students' perceptions and experiences of anxiety in an online collaborative project? This question was answered through four sub-questions:

1. What are students' perceived reasons for anxiety in an online collaborative project?
2. How does anxiety in an online collaborative project impact student participation and performance?
3. What strategies do students use to cope with anxiety in an online collaborative project?
4. How can students experiencing anxiety be more effectively supported in online collaborative projects?

3. Context, Methods, and Data Collection

This chapter begins with a brief overview of the study context. The methodological approach that was adopted for the study is then outlined and justified. This is then followed by a description of the research design and the methods selected for data collection.

3.1 Study Context

The study was undertaken using students from the UK OU. More specifically, the module context was a level 2, 60-credit, undergraduate module called *Communication and Information Technologies* (module code: T215). As part of the T215 module, students are required to work in groups of between 5 and 8 to complete a group project. This involves producing: a wiki resource about online communication and a website for a specific 'client' (e.g. clients have included a community theatre and walking club). To complete the project, groups are provided with various online tools: 1) WordPress for web development; 2) a forum for group discussion; and 3) a wiki to document decisions made and to complete the wiki resource element. A student's overall grade for the project is made up of individual and group marks from the creation of the website and wiki resource; and there is a further split into marks awarded for the product (wiki and website) and process (e.g. peer feedback on the wiki and collaboration in the forum) (see Figure 1). Students are also required to write a very short reflective report on the collaboration involved in the project.

Based on the study context outlined above, the next section of this chapter discusses the methodological approach used to explore students' perceptions and experiences of anxiety in the online collaborative project.

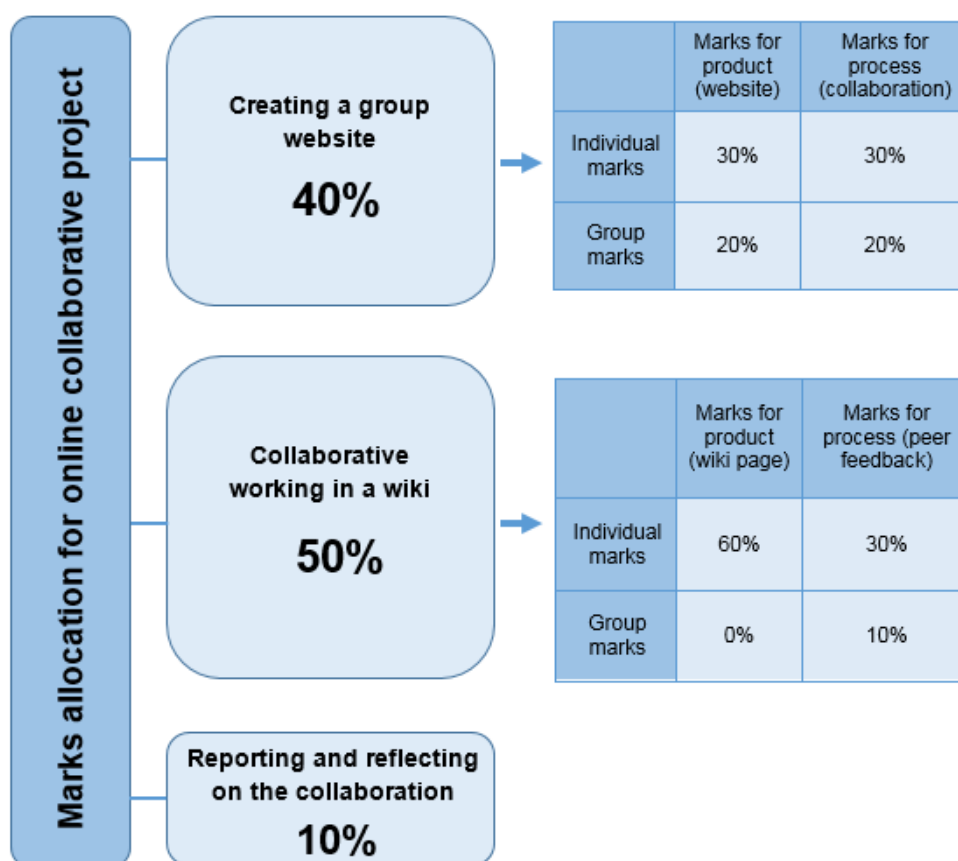


Figure 1. Marks allocation for online collaborative project.

3.2 Methodological Approach

In this study, an interpretive research paradigm was adopted. The interpretive paradigm argues that it is not possible to understand why people do what they do, without understanding how people interpret and make sense of the world (Hammersley, 2013). And this active interpretation, of both themselves and the environment, is shaped by their distinctive cultural orientations (i.e. their beliefs, attitudes, and practices) based on the particular cultures in which they live

(Hammersley, 2013). Therefore, understanding the meanings people bring to situations and behaviour is key to the interpretive research paradigm. From an ontological perspective, the interpretivist researcher adopts a relativist position which assumes that each individual experiences the world differently based on their own subjective experiences (Levers, 2013). Epistemologically, interpretivist researchers claim that meaning is socially constructed and is based on an individual's interaction with the world (Heaviside, 2017).

3.3 Research Design

The ontological and epistemological stance taken by this study may suggest that a qualitative research methodology be used. However, although the central component of this research came from qualitative data, a mixed methods research methodology was utilised. It was thought that this approach would help enhance the findings of the study and provide a more comprehensive portrait of experiences and perceptions of anxiety in the online collaborative project than could be generated by one method alone (Bryman, 2016).

The mixed methods design selected for this study was the Explanatory Sequential Design (Creswell and Plano Clark, 2011). In this two phased approach, the quantitative method of data collection and analysis precedes the qualitative phase. The collection and analysis of quantitative and qualitative data is then followed by an interpretation of both types of data, with an emphasis of using qualitative data to explain quantitative findings. More specifically, the 'participant selection model' (Figure 2a) outlined by Creswell and Plano Clark (2011) was used in this study. The chief rationale for selecting this mixed methods model is that the initial quantitative phase is designed to help purposefully select participants for the

in-depth, qualitative, second phase of the research (Creswell and Plano Clark, 2011). Although quantitative data were used for this purpose, it was also used to explore reasons for student anxiety as well as the impact of anxiety on participation and performance in the online collaborative project. The exact design used in this study was, however, slightly adapted from this model, as qualitative data was also concurrently collected with quantitative data in the first phase (see Figure 2b). Although this data was not analysed until the second phase, it did help inform participant selection along with the quantitative data.

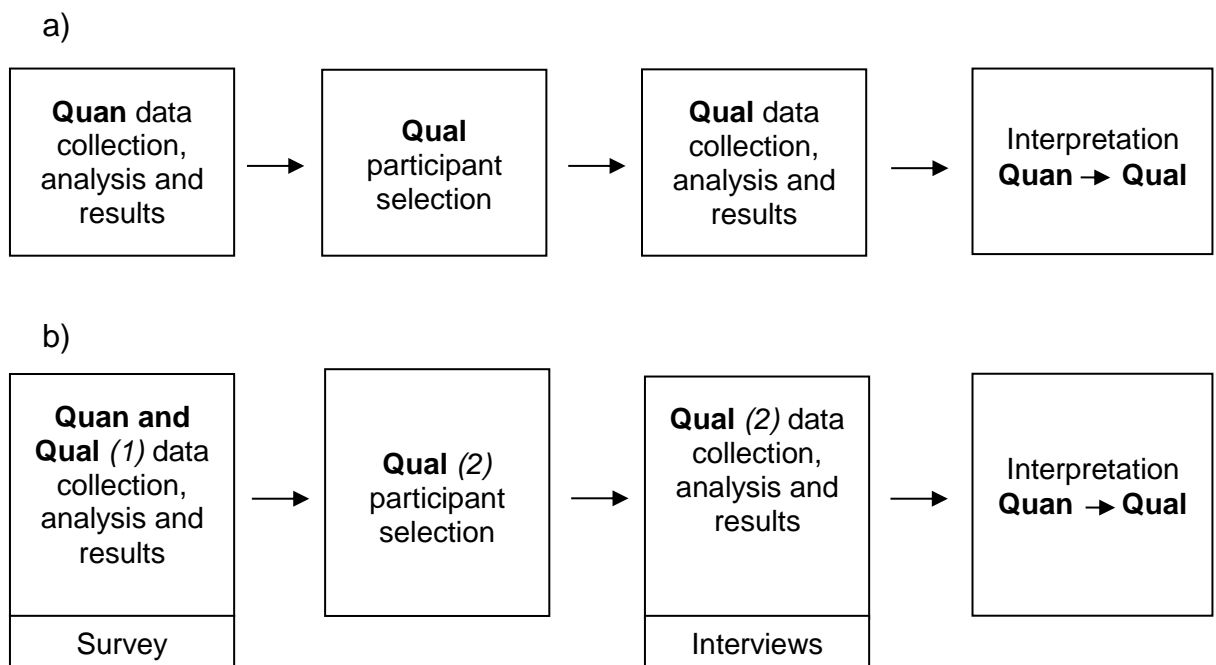


Figure 2. Explanatory mixed methods design: (a) traditional participant selection model, and (b) adapted participant selection model for current study (adapted from Creswell and Plano Clark, 2011).

3.4 Research Techniques and Instruments

3.4.1 Online Survey

Research Technique

An online survey was used in the first phase of the mixed methods design. This was aimed at gaining an initial understanding of students' perspectives and experiences of anxiety in the online collaborative project (mapped with the following research questions: Q1, Q2, and Q4, see Section 2.3; mapping illustrated in Chapter 4, Section 4.1), and to purposefully recruit participants for the second phase of the study.

Surveys, administered in various ways (i.e. self-administered, postal, telephone or online), have frequently been used when investigating student views, perceptions and experiences of online learning and computer-mediated communication (e.g. Angelaki and Mavroidis, 2013; Capdeferro and Romero, 2012). For the first phase of this mixed methods study, an online survey was utilised. This approach to administering the survey has many advantages when compared with other methods, such as being cheaper and requiring less time and resources during data collection (McPeake et al., 2014). It also allows data to be exported to statistical packages which will significantly facilitate the data analysis process (McPeake et al., 2014). Another major advantage of this technique is that it allows access to populations separated by large geographical distances (Wright, 2005). This was essential in this study due to its focus on individuals from a distance learning environment.

Numerous limitations have also been highlighted regarding online surveys (e.g. see Bryman, 2016; McPeake et al., 2014), and these have often been

concerned with sampling (e.g. difficulties establishing a sample frame, low response rates, and self-selection bias) and access (e.g. gaining access to the community) (Wright, 2005). As students from the T215 module at the UK OU were used in this study, there were no issues surrounding generating and gaining access to a sample. It has been suggested that online surveys produce lower response rates compared to administering surveys in other ways (Nulty, 2008), however, this is not a unanimous position as research has also found better response rates when using such methods (Lonsdale et al., 2006). Furthermore, due to the UK OU being a distance learning institution the use of an online survey was seen as a suitable survey mode.

The over saturation of online survey research can lead to lower survey response rates (McPeake et al., 2014). However, the UK OU Student Research Project Panel (SRPP), who provide approval to any research involving OU students or graduates, ensured that anyone undertaking the online survey in this study had not completed more than two surveys within the last 12 months. A number of strategies were also used to enhance survey completion rates (McPeake et al., 2014; Nulty, 2008), including: keeping the survey brief without threatening the integrity of the data collected; stating an estimated completion time in the introductory email; sending at least two reminders to non-respondents; and extending the duration of the survey's availability.

Research Instrument

The final survey comprised 14 items (Appendix A). Of these, 13 had closed response options, and one question had an open-ended response. Three types of closed questions were used in the survey: rating scales (i.e. a 5-point scale ranging

from 1 'Strongly agree' to 5 'Strongly disagree'); multiple response; and dichotomous. In addition, all 13 closed questions or statements had an optional 'Additional comments' box, providing respondents the opportunity to explain and qualify their responses. It was thought that having this additional qualitative element to the survey would help gain a greater understanding of participants' quantitative responses. Furthermore, it gave a 'voice' to those individuals who may not wish to participate in interviews, and helped further aid the purposeful selection of participants for this second phase of data collection. When creating the research instrument, thorough consideration was given to guidelines and principles of effective survey design (e.g. Lumsden, 2007).

3.4.2 Interview

Research Technique

For the second phase of the study interviews were used. These were aimed at gaining deeper understanding of anxiety from students who had experienced this emotion. This research technique is based on the assumption that knowledge is socially constructed, or reconstructed, by the interaction between the researcher and the informant (Patton, 2002). And such a constructivist view of knowledge creation is in line with the overarching philosophical position of this study, described in Section 3.2. Interviewing also has a long tradition in understanding individuals' thoughts and feelings, and can provide 'insightful accounts' of emotion at 'a fine-grained level' (Rienties and Rivers, 2014, p.14).

Advocates of interviews believe they can act as a '...window into the minds of informants and/ or as a window on to the social worlds in which informants live' (Hammersley and Gomm, 2008, p.89). Believing that interviewing will allow for

'direct' explanations for human action and the opportunity to access and explore participants' experiences, perspectives, beliefs and orientations (Kvale, 1996). The use of interviews has, however, attracted criticism in recent years. And this has led to what has been coined the 'the radical critique of interviews' (Murphy et al., 1998, p.120). Proponents of this critique argue that interviews are 'contextually situated' (Murphy et al., 1998, p.120) and are therefore unable to tell us anything outside of the context of the interview regarding people's stable attitudes and perspectives that govern their behaviour.

However, Hammersley (2003) states that '...the radical critique of interviewing should not be adopted uncritically' (p. 124) and '...does not justify abandoning the standard uses of interview material, even less interviews as a data source' (p. 125). In line with Hammersley and Gomm (2008), it is also thought that more caution is necessary when interview data is used in research and recommendations outlined by these authors should be followed to ensure that interview data is not undermined. For instance, the nature of the questions should always be deliberated as they are often difficult for the informant to answer. It is also advised that interview data should be compared or triangulated to other sources (Hammersley and Gomm, 2008).

Telephone interviews were selected for this study due to the distance learning environment in which the students were based. This mode of interview can significantly reduce costs when participants are geographically dispersed (Bryman, 2016). Additionally, due to the nature of the topic being discussed it was thought that individuals might prefer to be contacted over the telephone rather than by interviewing face-to-face. As noted by Bryman (2016), the telephone interview may

help informants feel more relaxed, and disclose more sensitive information. This mode of interview has also been found to produce data of a similar amount and quality when compared to face-to-face interviews (Sturges and Hanrahan, 2004).

Research Instrument

To direct the interaction of the telephone interviews, a pre-planned interview guide was created (Appendix B). This adopted a semi-structured approach, using open-ended questions, and was aimed at gaining a detailed understanding of students' perspectives and experiences of anxiety in the online collaborative project (mapped with all four research questions; see Section 2.3). This approach allowed key topics and issues (e.g. in relation to research questions and findings from the survey) to be pursued, whilst, at the same time, allowing the participants freedom to explore their own thoughts. The final version of the interview guide comprised 11 primary questions, and 10 of these had probing questions aimed at eliciting more information and elaboration from the informants. When creating the guide, recommendations outlined by Bryman (2016) were followed.

4. Collecting and Analysing the Data

This chapter provides a full description of how data was collected and analysed in this study. It then moves on to discuss the various measures that were taken to ensure quality, and finally concludes with a discussion of relevant ethical considerations.

4.1 Data Collection and Analysis: An Overview

A summary of data collection and analysis methods, mapped to research questions, is shown in Table 1.

Table 1. Methods of data collection and analysis mapped to research questions.

Methods of data collection	Methods of data analysis	Research questions (see section 2.3)
Online Survey (quantitative)	➤ Descriptive and inferential analysis of closed questions	Q1 and Q2
Online Survey (qualitative)	➤ Thematic analysis of open questions	Q1, Q2, and Q4
Telephone Interviews	➤ Thematic analysis of interview transcripts	Q1, Q2, Q3, and Q4

4.2 Data Collection

4.2.1 Online surveys

In the 2016/ 2017 academic year, 422 students were registered at the start of the T215 module. From this, 290 (68.7%) were contacted about taking part in the research project. The remaining 31.3% were not contacted as they had either taken part in educational research within the previous 12 months or had asked not to be contacted about such research. After the completion of the T215 online collaborative project, an email (Appendix C) was sent to these students inviting them to take part in the online survey (created using Qualtrics); this was undertaken by the Institute of Educational Technology Student Statistics and Survey Team at the UK OU. Three reminder emails (Appendix D) were also sent out after 2, 3 and 4 weeks from this date. The survey closed 4 weeks and 5 days after being sent to students, and a final response rate of 26.2% (76 respondents) was achieved. Respondents completed the survey anonymously, but anyone willing to take part in the second phase of the study (the interviews) provided their email address. The respondents ranged in age from 22 years to 70 years ($M = 37.39$ years, $SD = 10.76$ years) and the majority were male (80.3%). The demographics of the survey respondents were consistent with the course cohort (Appendix E). Figure 3 provides for an overview of online survey data collection procedures.

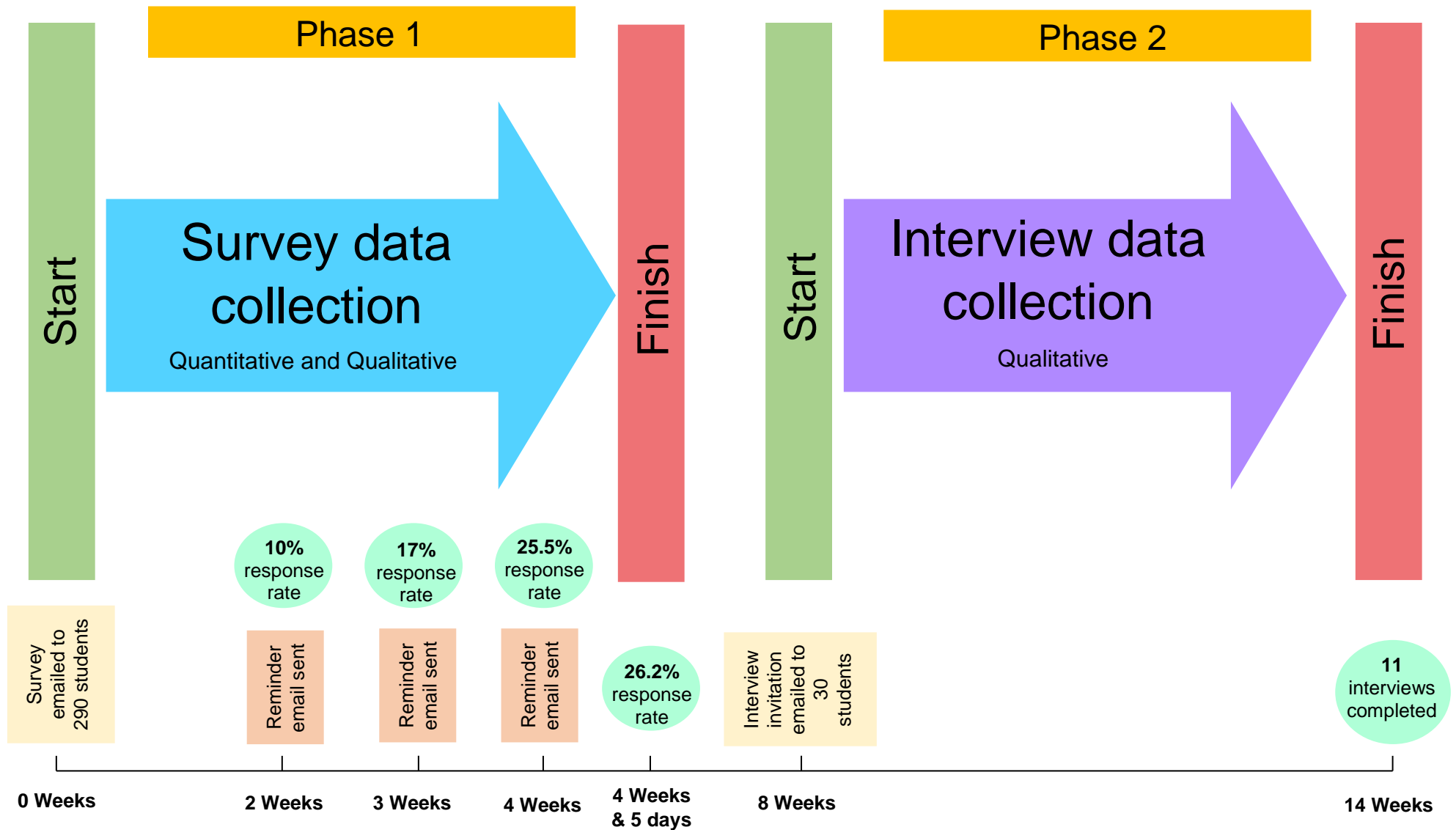


Figure 3. Diagram of data collection procedures.

4.2.2 Interviews

From the 76 respondents to the online survey, 40 (52.63%) provided their email addresses, indicating their willingness to take part in a follow-up interview. A purposive sampling method was used to select potential informants. For respondents to be selected, they must have clearly indicated that they had experienced feelings of anxiety before and/or during the online collaborative project (either through qualitative or quantitative survey responses) (see Appendix F for sampling criteria). From this selection process, 30 respondents were sent an invitation email outlining the purpose of both the study and interview (Appendix G), and 11 of these replied and returned a signed copy of a consent form (Appendix H) which was attached to the invitation email (see Appendix I for informant profiles). The other 19 students did not respond to the invite.

Telephone interviews with the 11 informants each lasted for approximately 30 minutes (see Appendix J for a sample of an interview transcript). All interviews were completed at a time that was convenient for the informant and were recorded using a digital voice recorder. A financial reward (a £20 Amazon voucher) also given to each of the participants who completed an interview.

4.3 Data Analysis

Analysis of both quantitative and qualitative data was undertaken in this mixed methods investigation. Due to the philosophical stance taken by this study, any statistical analysis of closed questions from the online survey was aimed at developing a general understanding of student perceptions and experiences of anxiety in the online group project and acted as a springboard for further exploration through open-ended survey responses and interview data.

4.3.1 Quantitative Analysis

In this study, both descriptive and inferential statistics were used. Initially, data from the online survey were exported to Microsoft Excel 2013 (Microsoft Corporation, Redmond, Washington, USA). Frequencies (n , %) of all closed questions were then calculated and transformed into graphs using the same computer program. A Wilcoxon signed-rank test was used to detect significant differences in perceptions of anxiety before and during the online collaborative project. A Spearman's correlation coefficient was also calculated to explore the bivariate relationships amongst these items as well as at relationship between perceptions of how anxiety impacted participation and performance. In accordance with Cohen (1988), correlation coefficient effect sizes of 0.1, 0.3, and 0.5 represented small, moderate and large associations, respectively. All inferential statistics were completed using conventional statistical software (SPSS). Statistical significance was set at $P < 0.05$.

4.3.2 Qualitative Analysis

Qualitative analysis was conducted on data collected from open-ended survey responses and semi-structured interviews, and was undertaken using thematic analysis (Braun and Clarke, 2006). Braun and Clarke (2006) state that thematic analysis involves identifying, analysing and reporting patterns (themes) within data. A theme '...captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set' (Braun and Clarke, 2006, p. 82).

In this study, the primary method of identifying themes within the qualitative data was through an inductive or 'bottom up' approach. This form of thematic

analysis is described as a ‘...process of coding the data without trying to fit it into a pre-existing coding frame, or the researcher’s analytic preconceptions’ (Braun and Clarke, 2006, p.12). It is important to acknowledge that questions in both the online survey and interview were guided by the research questions of the investigation. And this, for instance, may have been influenced by the researcher’s own theoretical interest in the topic and therefore impacted how participants responded and how data were interpreted.

The thematic technique used in this study followed the six-phase procedure outlined by Braun and Clarke (2006). In the first stage, data were read and re-read with the aim of becoming familiar and immersed in the qualitative content. Although open-ended survey responses were already in written text form, interview data were transcribed verbatim by an external transcriber. As recommended by (Braun and Clarke (2006), more time was spent familiarising oneself with this data set. Initial ideas were also identified and refined during this stage. During the second stage, data were systematically worked through and interesting features coded. A total of 45 codes were generated during this phase (Appendix K). The third stage involved sorting codes into potential themes. During this stage, five initial themes were identified and an initial thematic map was produced (Appendix K). In the fourth stage, themes were reviewed further and two of the initial themes (*Different impacts on participation and performance* and *Different coping strategies employed*) were collapsed into one theme (*Anxiety affects students differently*) (Appendix L). It was thought that both of these initial themes were characterised by how students responded to feelings of anxiety. In stage five, themes were refined and a detailed analysis of each theme was completed. The final stage involved selecting extracts that would help illustrate the themes and provide a voice to survey respondents and

informants in a written report. All data were analysed using the qualitative analysis software NVivo 11.

4.4 Measures Taken to Enhance the Quality of the Research

Quality criteria for mixed methods research outlined by Bryman (2014) were followed throughout this study. First, the project was completed in a technically competent manner, ensuring sampling, survey and interview guide design and implementation, analysis of quantitative and qualitative data, and inferences made were carried out proficiently. Second, the qualitative and quantitative components of the mixed methods design have been clearly articulated and there is transparency regarding how data was collected and analysed. Third, research questions for the study have been clearly linked to the different research methods used. Fourth, the type of mixed methods research design has been outlined and a clear rationale has been provided. Last, findings from the two components of the research (qualitative and quantitative) have been brought together and integrated in the discussion section of the report.

4.5 Ethical Considerations

Ethical approval from the UK OU's Human Research Ethics Committee (HREC) (Ref: HREC/2017/2479/Hilliard; Appendix M) was gained on 31st January 2017. An application to the SRPP was also completed and approval was granted on 3rd February 2017.

Before consenting to participate, students were made fully aware of the purpose of the investigation and that the decision on whether to participate or not would have no effect on any aspect of their module or university study. All students

were informed that information obtained in the research would be used for a postgraduate research project and may be used in future written reports and publications. Participants were also made fully aware of their right to withdraw from the study at any time and that the data they had provided up to this point would be destroyed. To help support students who may have felt anxious during the online group work in T215, advice and support on how to cope with anxiety was provided to students at the following times: on the invitation email for the online survey; at the end of the online survey; and at the end of the telephone interview. Any information gathered from participants was strictly confidential and no names of participants were used. All interviews were transcribed by the same external transcriber and a confidentiality agreement (Appendix N) was signed before this began. A password protected computer was also used to store all collected data.

5. Findings and Analysis

In this chapter, the main findings of both the online survey and interviews are presented. Quantitative results from the online survey are given first, followed by qualitative findings from both the open ended survey responses and interviews.

5.1 Quantitative Findings from Online Survey

5.1.1 Prevalence of anxiety

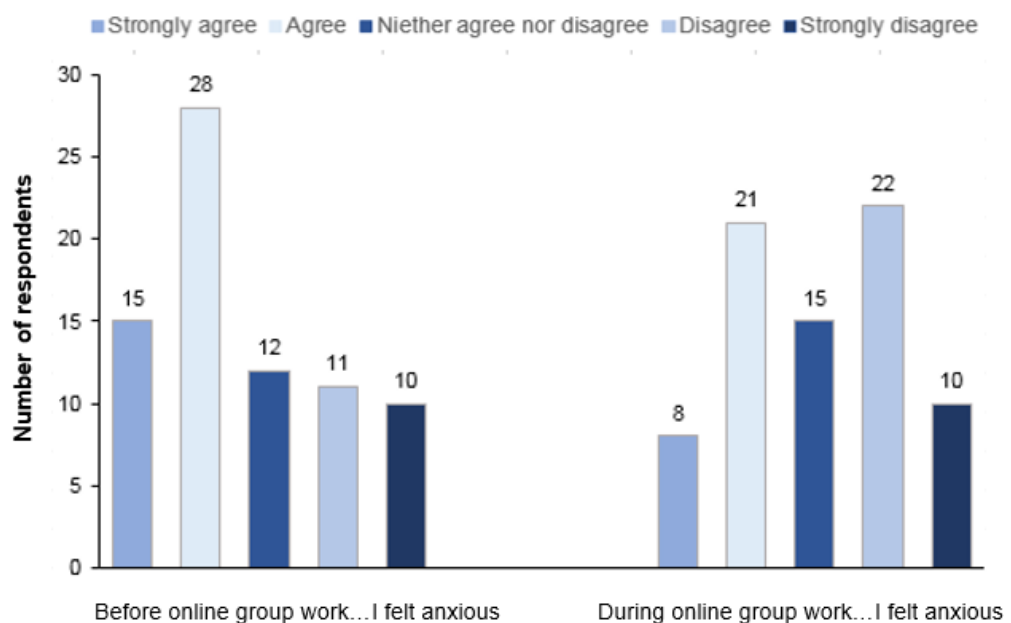


Figure 4. Feelings of anxiety before and during the online collaborative project.

In the online survey, students were asked to respond to statements about whether they felt anxious before or during the online collaborative project (using a 5 point-scale from 1 '*Strongly agree*' to 5 '*Strongly disagree*'). Figure 4 illustrates students' responses to these statements. A Wilcoxon signed-rank test indicated that median ranks for feelings of anxiety during the online collaborative project ($Mdn = 3$) were significantly higher than median ranks before the online collaborative project

($Mdn = 2$, $z = -2.911$, $p < 0.01$, $r = -.33$). This indicates that respondents were more anxious before than during the online collaborative project (56.6% of respondents selected either '*Strongly agree*' or '*Agree*' before the project, compared to 38.2% during the project). A significant positive relationship between feelings of anxiety before and during the online collaborative project was also found ($r_s = .51$, $p < .001$).

5.1.2 Perceived reasons for anxiety

A multiple response question asked students to identify the cause(s) for anxiety in the online collaborative project. From the 76 respondents, 69 (90.8%) selected one or more of the responses. From these, the largest perceived cause of anxious feelings was '*Relying on others to complete the task and achieve a good mark*' (as illustrated in Figure 5). The second and third most common perceived causes were '*not being in full control of my overall performance in the module*' and the '*Worry that I would let others down*', respectively. Four respondents selected the 'Other' option. Although one stated '*I did not experience anxiety*' (Respondent 59, Male, 30-39 years) the other three provided the following causes for anxiety: 'Others would not complete the tasks on time' (Respondent 75, Male, 40-49 years), 'Not being able to approach anybody for guidance' (Respondent 58, Male, 65 and over) and 'I suffer with anxiety in general everyday life anyway' (Respondent 72, Male, 30-39 years).

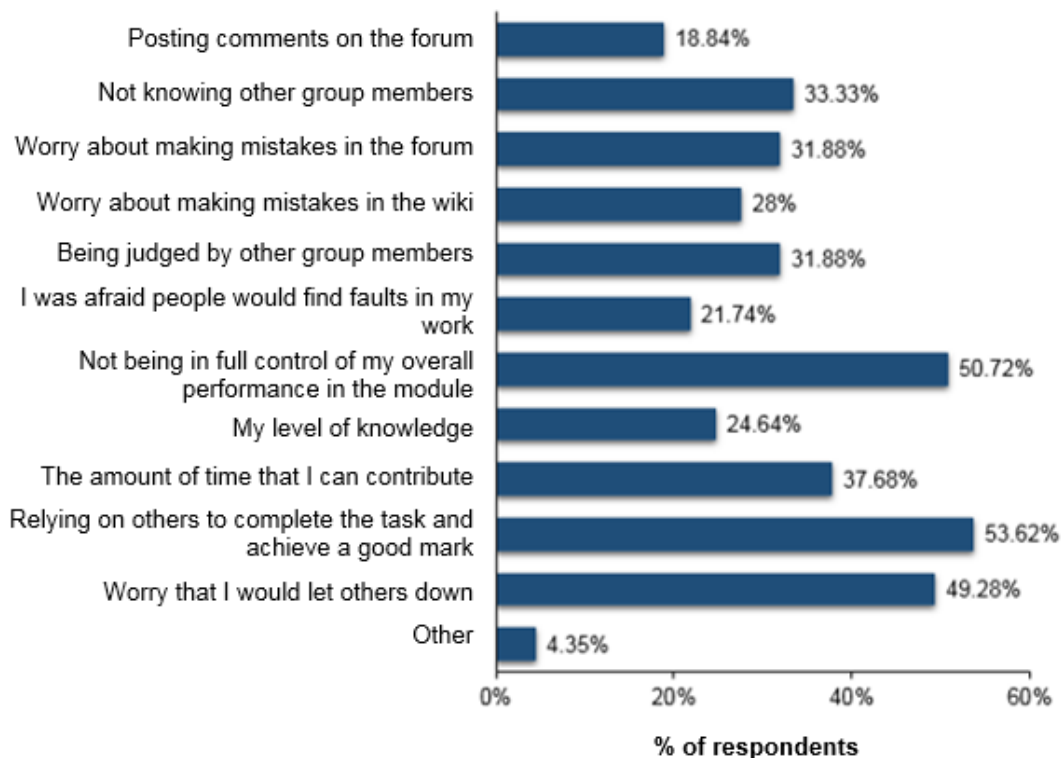


Figure 5. Perceived reasons for anxiety before and during the online collaborative project.

5.1.3 Impact of anxiety on student participation and performance

Figure 6 shows how students believed their anxiety impacted participation and performance in the online collaborative project. More respondents perceived anxiety to have a positive impact (31.6% selected either '*Positive*' or '*Very positive*' response options) than a negative impact (23.7% selected either '*Negative*' or '*Very negative*' response options). A large portion also perceived anxiety to have no impact on participation (30.3% selected the '*Neutral*' response option), whilst 14.5% of respondents stated they did not experience anxiety. When asked how anxiety had impacted their performance, a greater percentage of respondents perceived anxiety to have a positive impact (32.9% selected either '*Positive*' or '*Very positive*' response options) than a negative impact (18.4% selected either '*Negative*' or '*Very negative*' response options). Again, there was a large percentage of respondents who thought anxiety did not have an impact on their performance (31.6% selected

the ‘*Neutral*’ response option), and 17.1% of respondents reported that they did not experience anxiety. A significant positive relationship was found between how respondents perceived anxiety to impact participation and performance ($r_s = .80$, $p < .001$).

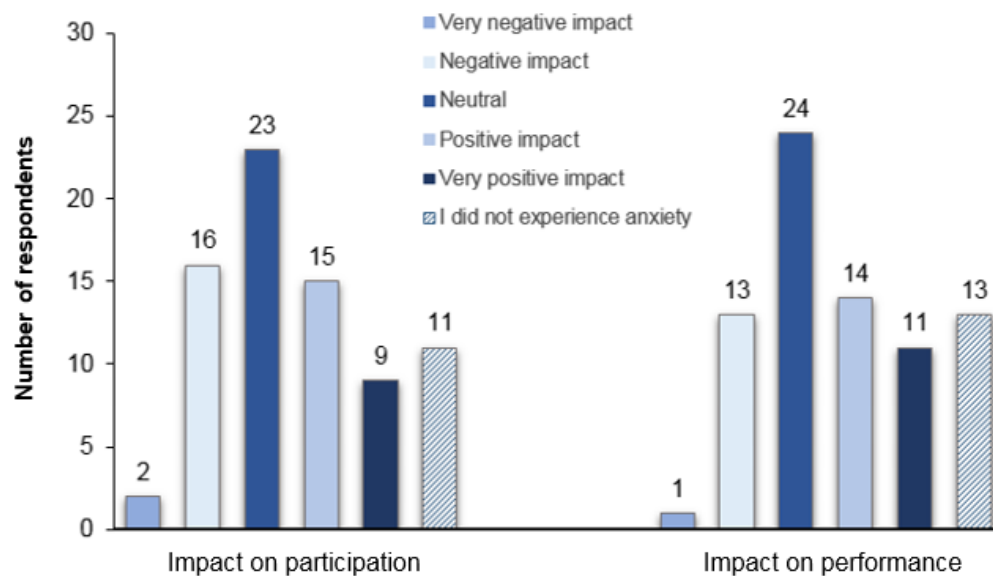


Figure 6. Impact of feelings of anxiety on participation and performance in the online group project.

A multiple response question was used to gain an understanding of the ways in which feelings of anxiety affected respondents’ participation and performance. Out of the 76 respondents, 71.1% selected one of more of the response options. From these, the four most selected ways participation and performance were affected related to not wanting to initiate discussion on the forum, only taking on tasks they were confident in, posting lower numbers of comments in the forum, and a large number of respondents selected the ‘*Other*’ response option (as illustrated in Figure 7). From the 20 respondents who selected this, 9 explicitly stated that anxiety impacted participation and performance by making them try harder and be

more proactive. For example, Respondent 46 (Male, 40-49 years) wrote 'I did try to cover up my anxiety by getting involved with everything I could', whilst Respondent 68 (Male, 50-59 years) stated 'It [anxiety] made me try harder and attempt to engage more with fellow students'. Comments made by all 20 respondents who selected the 'Other' option are shown in Appendix O.

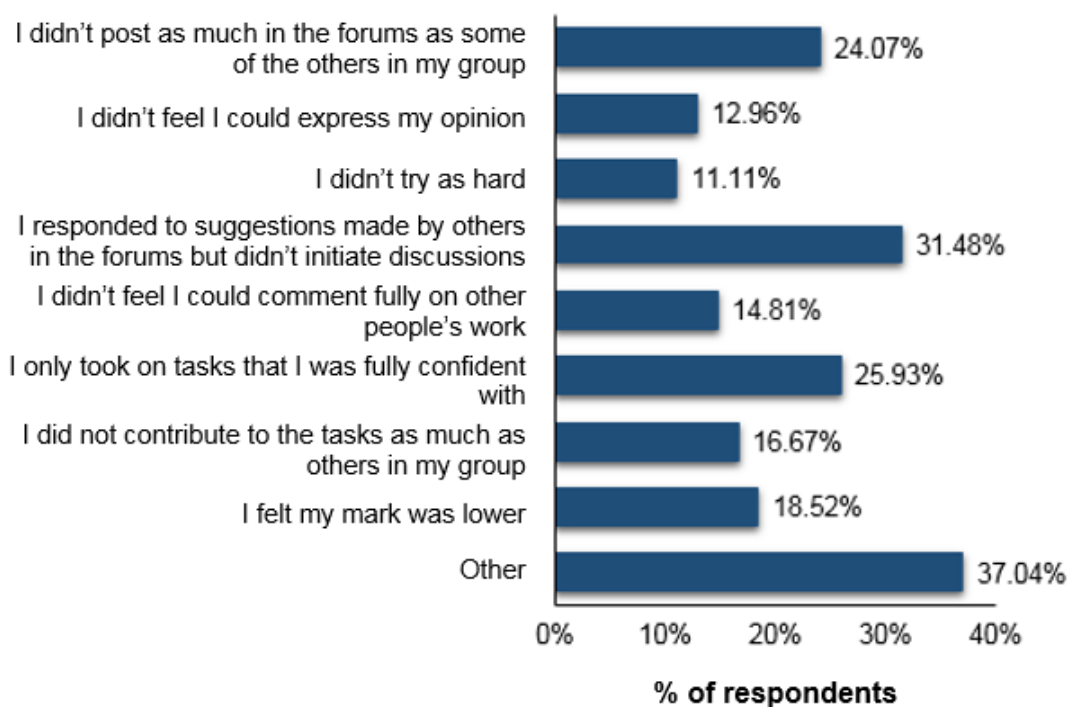


Figure 7. Ways in which feelings of anxiety affected participation and performance.

5.2 Qualitative Findings from Online Survey and Interviews

Four main themes emerged through thematic analysis of open-ended online survey responses and interviews: 1) uncertainty causes students to feel anxious; 2) anxiety affects students differently; 3) there is a change in anxiety throughout the collaborative process; and 4) ways anxious students can be supported. Each theme is described below and a thematic map is presented in Appendix L.

5.2.1 Uncertainty causes students to feel anxious

Uncertainty was a major cause of anxiety for students. Comments highlighted that before or at the start of the project uncertainty was often due to working with 'strangers' and being reliant on these 'unknown others' to successfully complete the project and achieve a good grade.

'...I just didn't know them, I didn't know what their aims were, I didn't know anything about them, I didn't know their capabilities. And for those reasons that's where my anxiety stemmed from.' (Informant I)

'...if I mess up a project and it is off my own back that's fine I'm the one that is responsible, but when there are other people responsible and you don't know who they are, what they are like, it is just really nerve-wracking.' (Informant G)

Another commonly cited uncertainty was that of non-active group members. Comments highlighted that this led to worry about how overall grades may be impacted and apprehension about having to do additional work.

'Failure was looming with 50% of the students not playing an active role in the group. It was so bad at times I actually thought it was setup on purpose!' (Survey respondent)

It was apparent that many students experienced anxious feelings due to the fear of negative evaluation or judgement from other group members. Comments were often linked to the peer feedback activity in which learners had to provide feedback on draft wiki pages created by two group members. Learners worried their comments may be misinterpreted or cause offense.

'I was a little nervous as to what people would think of my contribution – might it be rubbish in comparison to theirs' (Survey respondent)

...I hated the feedback, that was the worst part of it... putting that across [areas for improvement] was so hard in a positive way without coming across as I don't know, I know better or something, which I certainly don't, it was so difficult to phrase it correctly and not to, as I thought I might, upset people.' (Informant B)

Numerous learners expressed uncertainty of their own ability or level of knowledge (i.e. related to subject matter or, to a lesser extent, use of online tools). This caused worries about letting others down, keeping up with the group, and making mistakes.

'Did i understand what I was talking about?' (Survey respondent)

'My main fear is I am going to let the group down and then I am going to show myself up for the idiot that I am!' (Informant C)

Uncertainty of the amount of time and effort that could be committed to the collaborative project was a further anxiety for a number of learners. Comments noted that before starting the project some students perceived collaborative learning to be a time-consuming activity that reduces the flexibility of online learning, and that having full-time jobs and families meant that students worried that they may not be able to fully contribute.

'I felt somewhat anxious as to whether I could dedicate enough time to the activity.' (Survey respondent)

'I have a very busy life/work and I fit study in when I can to fit my family. I felt that I had to organise my life around others.' (Survey respondent)

5.2.2 Anxiety affects students differently

There was a substantial difference in how anxiety affected students in the online collaborative project. This was considered through two sub-themes; coping, and participation and performance

Coping

Being more proactive was the most common coping strategy employed. Learners who conveyed being proactive commented that anxiety made them work harder, plan their time more thoroughly, take on bigger roles within the group, seek information from tutors, monitor other group member's contributions more

frequently, and engage early with communication and collaboration. Some students expressed that they did this as they did not want to let the group down and have a negative impact on the overall grade. Others suggested that being proactive allowed them to take more control over the situation.

‘this [anxiety] made me think more about how I was going to work in the group. I also decided I was going to start doing my part early so I would not fall behind or let any of the group down.’ (Survey respondent)

A number of learners described how being more diligent and taking increased care over their work helped them cope with anxiety. It was also highlighted by some learners that the asynchronous nature of the forums and wiki allowed them time to reflect upon comments and consider responses, helping them alleviate anxiety they usually experience in face-to-face group work.

‘I am extremely nervous of meeting new people face to face or over the phone. I don't have that issue if the meeting is online. Online interaction allows me time to consider and evaluate my response.’ (Survey respondent)

Seeking emotional support to cope with feelings of anxiety was explicitly indicated as a coping mechanism by a couple of learners. It was also noted that students were using Facebook to vent feelings and emotions about the online collaborative project.

‘I feel lucky in that my partner is also doing an OU degree and she has had a very similar experience to what I have, a lot of time was spent talking to

her, just expressing your concerns and knowing that someone else feels the same way is rather nice' (Informant C)

'Many students on the Facebook group also mentioned being worried about the potential for losing marks because of non-participants.' (Survey respondent)

Although fewer learners described more negative coping strategies, a number of comments related to stepping back and not fully engaging with collaboration. Many of these learners commented that they were reluctant to make first contact and would wait until others had interacted before joining in.

'Yes it [anxiety] did impact because I was conscious of my work and home life commitments and I couldn't go straight in and be like yes, I can do this, yes, I can do that, you know I take control or be quite commanding in a way, so it made me take quite a step back and kind of be a bit more reactive instead of being proactive.' (Informant F)

More extreme disengagement was mentioned by two learners. One commented that he 'completely disappeared' from the online project at times, whilst another stated that he tried to avoid responding to others on the forum.

'I mean at times, for quite a few weeks I didn't put like anything onto the forums other than do, I just stuck to myself and did my own thing and then when it got closer to a deadline I would do more' (Informant A)

‘...if I was responding to other people on the forums I would try and avoid doing that as much as possible, but as for the course, as it was necessary for the module I couldn’t completely avoid it I had to do it a little bit, but it certainly wasn’t something that I enjoyed’ (Informant B)

Participation and performance

Comments revealed that anxiety had differing impacts on students’ participation (engagement in task) and performance (achievement in task) in the online collaborative project. The facilitative impact of anxiety was the most commonly expressed by learners. Many of these comments were also linked to the proactive strategies employed to cope with feelings of anxiety.

‘If anything, the anxiety pushed me into working harder to try and get as high a grade as possible.’ (Survey respondent)

A number of learners commented that anxiety had no impact on their participation and performance. For instance, two survey respondents stated: ‘I continued to work to my standards regardless’ and ‘I was anxious, but carried on working as one should.’

The negative, debilitating impact of anxiety was much less commented on than the facilitative effects of this emotion. From comments made by interview informants, there again seemed to be a link between employing disengagement and avoidance coping strategies and experiencing the debilitating impact of anxiety.

'It certainly didn't have a positive impact...I could have done better if I hadn't have been worried about other people's perceptions of me, so yes it would have negative impact I think.' (Informant B)

5.2.4 There is a change in anxiety throughout the collaborative process

Students perceived anxiety to change throughout the collaborative project. This theme is considered through two sub-themes: level of anxiety and cause of anxiety.

Level of anxiety

Many comments expressed a reduction in levels of anxiety throughout the online collaborative learning process, with numerous learners perceiving feelings of anxiety to be greater prior to the project beginning. A lowering of anxiety during the project was often attributed to the resolution of uncertainties, such as meeting and getting to know group members, understanding individual and group roles and responsibilities, and witnessing tasks being completed by peers.

'My anxiety was lifted as soon as I got to know fellow students in my project group.' (Survey respondent)

'I think once you determined what everyone had to do and the work was split up a lot of the anxiety had dissipated because a lot of the uncertainty had gone and I knew what I had to do and I could get on with it.' (Informant J)

However, Informant B commented that although his anxiety initially decreased after arranging a face-to-face meeting with his group, when this did not

materialise his anxiety increased again and remained elevated throughout the project.

‘...I even suggested a face to face meeting at one point and a couple of them initially were quite happy with that and that made me feel less anxious and more sort of supported by the others around me, but then they backed off and that never actually happened in the end’

Cause of anxiety

A couple of students commented that they perceived the cause of anxiety to change throughout the online project.

‘...beforehand, it came from you know the prospect of working with complete strangers...and certainly during the module, during the work, it was anxiety from am I contributing enough, am I playing my part. That kind of thing.’
(Informant J)

5.2.5 Ways anxious students can be supported

Many learners thought anxious students could be supported further in online collaborative learning environments. Two sub-themes emerged: supportive social and emotional climate and institutional support.

Supportive social and emotional climate

The development of a supportive social and emotional climate when completing online group work was seen as important for helping anxious students. Although it was mentioned by one learner that a ‘get to know your group task’ was undertaken

before the project, numerous learners commented that interacting and getting to know other group members to a greater extent at the beginning or prior to the project would have helped them feel more comfortable and less anxious. Comments also expressed that the completion of introductory ice breaker activities, use of more emotionally rich communication mediums, and increased face-to-face meetings would have helped foster communication and relationships between peers.

‘The group should have been formed at least two months before working together, at least that way the chance of knowing each other could have taken place.’ (Informant C)

‘The only suggestion I would have is to hold an OU Live session for each group, so that everyone can get acquainted in a live format. I believe that for us that this meeting made the group feel more comfortable working with each other.’ (Survey respondent)

Expressing emotions to peers is something learners may have found difficult in the online group project, as comments highlighted that if students were aware of others’ feelings this would have helped reduced their anxiety. This is supported by a small number of learners who commented that they felt less anxious after realising that other group members were experiencing similar emotions.

‘Possibly, maybe something that could be illustrating other people could be feeling exactly the same way as you... so it’s not strange for you to feel

anxious and I think knowing that possibly other people are going to be the same, feeling the same, lessens the anxiety.’ (Informant J)

As well as peers, a couple of students also conveyed that they felt unable to express feelings of anxiety to tutors.

‘...I didn’t feel I was really able to talk about it [anxiety], I don’t know if other people felt the same.’ (Informant B)

Informant H described how her group created other ‘outlets’ beyond the module forum such as a ‘secret’ Facebook group where group members ‘...could connect as people as opposed to just team members’. She expressed how this space allowed peers to express emotions and feelings which would have been difficult on the module forum. It also allowed individuals get to know each other on a personal level, for example, by sharing photos of their interests and aspects of their normal lives.

Institutional support

As well as developing a greater social and emotional climate, a second sub-theme of increased institutional support was also found. Numerous comments mentioned that more guidance and support could have been provided in the following areas: advice on best practices for online group work (i.e. from tutors or past students); information on using additional communication tools; and help with encouraging engagement and participation of group members.

'I think the OU could have pushed at the start to get everyone involved rather than just leaving it to the group' (Survey respondent)

Other comments in this sub-theme highlighted that anxiety may have been reduced if there were changes in the assessment marking, predominantly the group mark element. Additionally, some learners felt that the marking criteria were not clear and further clarification of these would have helped reduce anxiety.

'Make the group work pass or fail. You need to do it to pass course but marks are individual. This would mean effort is rewarded.' (Survey respondent)

'Perhaps knowing the criteria that we would be marked against when participating online.' (Survey respondent)

6. Interpreting the Data

In this section, the findings of the research are discussed in relation to the four research questions, and in the context of existing knowledge. This is followed by a discussion of the limitations of the study and suggested future research.

6.1 Discussion

The purpose of this study was to explore students' perceptions and experiences of anxiety in an online collaborative project. Previous studies have shown that this emotion is experienced by students involved in such learning contexts (e.g. Donelan and Kear, 2017; Symeonides and Childs, 2015; Potts, 2011), and this study provides significant support for this notion. The first research question asked, *'What are students' perceived reasons for anxiety in an online collaborative project?'* Quantitative results revealed that anxiety stemmed from a variety of sources, the following being the most frequently reported: reliance on others to complete the task; not being in full control; and worry of letting others down. These findings were supported by qualitative results which further highlighted the inter-individuality of the origins of this emotion, as well as increased anxiety caused by losing control and being reliant on 'unknown others' to complete this assessed activity.

The overarching theme of 'uncertainty' identified through qualitative analysis was consistent with Lazarus' (1991, 2000) core relational theme for this emotion (i.e. facing uncertain danger or threat). Lazarus (2000, p.244) suggests that feelings of anxiousness are aroused when '...important values and goals are threatened under conditions of ambiguity about what will happen and when we have only

limited personal resources to pit against the threat, which increases our sense of vulnerability.’ The unfamiliar (e.g. unknown method of study and unknown group members), assessed (increased relevance and importance to learners’ goals), and collaborative nature of the online project, led to the possibility of many situations being appraised as threatening by learners, such as the potential to lose marks in the project and achieve a lower grade in the module, the threat of negative judgment, and the fear of letting others down. And this ultimately caused feelings of anxiety when studying collaboratively online.

Numerous reasons for anxiety reported in this study support the findings of previous literature. These include: being dependent/ reliant on others (Allan and Lawless, 2003); feelings of inadequacy and low self-efficacy (Hartnett, 2015); concern about letting others down (Allan and Lawless, 2003); fear of negative evaluation/ judgment (Duncan et al., 2013); worries over assessment (e.g. group and individual grading) (Donelan and Kear, 2017); and being misinterpreted (Symeonides and Childs, 2015). One aspect of the project heavily linked to fears of negative evaluation and being misconstrued, was the peer feedback activity. A number of learners felt that due to the asynchronous nature of the wiki and the forum, interaction with group members was restricted (e.g. due to the lack of non-verbal cues and a reduced of spontaneous communication). This led to worries about how student comments and responses would be interpreted and the offence they may cause to other group members. In contrast, however, other learners indicated that the asynchronous communication allowed them time to reflect and consider responses, which helped alleviate anxiety normally experienced in synchronous or face-to-face contexts. Anxieties caused by different communication

modalities is an important consideration for online collaboration and is something that should not be overlooked when adopting this approach (Potts, 2011).

Although the influence of non-active group members, or 'free-riders', has been discussed at length in research related to online collaborative learning (e.g. Capdeferro and Romero, 2012), few studies have identified this issue as a direct source of anxiety. In this study, findings from qualitative data revealed that numerous learners worried that these non-active members could jeopardise the collaborative project and create more work for active members. Another finding, highlighted from both quantitative and qualitative results, was that many learners perceived anxiety to stem from uncertainty over the ability to balance undertaking the online collaborative project with work and life commitments (Brindley et al., 2009; Macdonald, 2003). Many students at the UK OU undertake degrees on a part-time basis and it is not uncommon for learners to study alongside full-time work. Introducing a new unfamiliar type of educational approach, meant a number of students were not aware of the commitment demands prior to the project. Furthermore, it was perceived by some as more time-consuming, less flexible, and not as convenient as traditional online study.

Interestingly, the present study found that many learners perceived anxiety to change throughout the collaborative process. Quantitative and qualitative results revealed that many students perceived anxiety to be greater before or at the start of the online project and lower during the activity. A couple of learners also perceived a change in the reasons for anxiety as the project progressed. These changes can be explained by the subsequent resolution and/or reappraisal of the anxiety-causing uncertainties. For instance, fear of the 'unknown' was lessened as

learners became familiar with their group members and understood their roles and responsibilities. This is similar to the development of 'emotional kinship' described by Zembylas (2008, p.82), who explained how communication between peers changed the dynamic of the online experience and helped reduce anxiety in learners. Developing familiarity and trust between group members can therefore be seen as an important factor for reducing feelings of anxiety in online collaborative learning (Potts, 2011; Allan and Lawless, 2003). This finding also highlights the temporal, or moment-to-moment, changes of this emotion, which is an important consideration for future research (Lazarus, 2000).

The second research question was, '*How does anxiety in an online collaborative project impact student participation and performance?*' Findings from both quantitative and qualitative data revealed substantial individual differences in how anxiety influenced participation and performance, with facilitative, debilitating, and neutral impacts being reported. Both quantitative and qualitative results highlighted that more learners perceived anxiety to be facilitative than debilitating. This is a very surprising finding as anxiety is often considered a negative emotion with detrimental consequences. This supports the findings of Falkner et al. (2013), who found evidence of facilitative anxiety in a face-to-face collaborative learning setting. The idea that anxiety can have facilitative properties has, however, stimulated much debate in recent decades (e.g. in the academic discipline of Sport Psychology; see Hanton et al., 2008) but is supported by a number of emotional theorists (e.g. Pekrun et al., 2006; Lazarus, 2000).

A number of scholars have attempted to explain how anxiety can act as a powerful and energising emotion (e.g. Strack et al., 2017; Strack and Esteves,

2015; Pekrun et al., 2006). Strack and Esteves (2015), for instance, propose that if people interpret anxiety as facilitative they will appraise the emotional encounter, or stressor, as a challenge (i.e. as an opportunity for self-growth or something positive) rather than a threat (i.e. as something negative). They believe that this interpretation will lead to increased motivation, effort, and enhanced levels of performance, as well as reduced levels of emotional exhaustion that are often associated with anxiety. Strack and Esteves (2015) further claim that this interpretation may explain why some individuals thrive on anxiety and others experience the debilitating effects of this emotion when faced with the same situation. Future investigation would, however, be needed to test this theory in online collaborative learning settings.

Although the perceived facilitative impacts of anxiety are one of the most significant findings of this study, a greater understanding of how these facilitative effects are elicited and what impacts they have on participation and performance is needed. It is also important that educators do not use these findings to encourage this emotion in online collaborative settings. Anxiety is characterised as being a negative and unpleasant emotion, and although it may have facilitative effects for some learners, it can also have disastrous impacts on learner well-being, satisfaction, and motivation.

The third research question was, '*What strategies do students use to cope with anxiety in an online collaborative project?*' From the analysis of qualitative data, it was revealed that students employed a range of coping strategies throughout the project. Most frequently cited were strategies with a problem-focused coping function (e.g. increased effort, planning time more thoroughly, taking control, and

seeking information) when compared to those serving either emotion-focused (e.g. venting, emotional expression, and seeking emotional support from family and peers) or avoidance coping (e.g. disengagement from the project) functions. It was also noted that many learners who employed problem-focused coping strategies perceived anxiety to have a facilitative impact on their participation and performance in the online collaborative project. Conversely, those who employed avoidance strategies perceived anxiety to have debilitating effects. These findings build on previous literature, as few studies have explored how learners in online collaborative environments cope with emotional encounters.

From the reviewed literature, the importance of emotion-focused coping in helping learners manage anxiety in online learning environments has been emphasised (e.g. Symeonides and Childs, 2015; Zembylas, 2008). In support of Symeonides and Childs (2015), this study found that the use of emotional support (from peers and family members) and reading self-discourses of others' feelings and struggles throughout the collaborative project, helped alleviate anxiety in a number of learners. Although some students conveyed they were comfortable expressing emotion and seeking emotional and psychological support, others revealed that they were reluctant to discuss their feelings with peers in the online forum, as they perceived it to be non-conducive to the online activity. Comments revealed that some learners were comfortable expressing and venting their feelings via a Facebook group created by learners in the T215 module. This constituted a personal and private area for learners to discuss less formal aspects of the module. Results also revealed reluctance from a number of learners to seek emotional support from tutors, supporting the findings of previous studies (Symeonides and Childs, 2015; Xu et al., 2014).

According to Lazarus and Folkman (1984) there are no universally appropriate or inappropriate coping strategies, and coping responses appear to differ depending on whether an emotional encounter is appraised as controllable or uncontrollable. The goodness-of-fit hypothesis (Lazarus and Folkman, 1984) suggests that emotional encounters considered controllable tend to lead to the utilisation of problem-focused coping strategies (i.e. an attempt to change controllable stressors), whilst emotional reactions that are perceived to be beyond personal control often lead to the use of emotion-focused coping responses (i.e. an attempt to adapt uncontrollable stressors). In relation to the present study, issues of control could be viewed as central to the coping process. Those individuals who employed problem-focused coping may have evaluated anxious encounters as controllable whilst those who employed emotion-focused coping or avoidance coping may have perceived encounters as uncontrollable. However, given that perceived control of anxious encounters was not assessed in this study, firm conclusions cannot be drawn.

The ability of individuals to cope with negative emotions (such as anxiety) when undertaking online collaborative learning is an important consideration for educators in online and distance learning contexts. Advising learners how to effectively cope with controllable (i.e. use of problem-focused coping) and uncontrollable (i.e. use of emotion-focused coping) stressors, may have beneficial impacts not only on participation and performance but also on fostering positive and enjoyable learning experiences. Guidance should provide learners with knowledge of a range of coping strategies (e.g. various problem- and emotion-focused coping

strategies) to address the substantial inter-individual and intra-individual variability in this process (Lazarus and Folkman, 1984).

The final research question of this study asked, *'How can students experiencing anxiety be more effectively supported in online collaborative projects?'* As well providing advice and guidance on coping strategies, as outlined above, it emerged that learners perceived developing a more supportive social and emotional climate important for helping those with anxiety. Central to this, was getting to know other group members before or at the start of the project; for example, through ice-breaker/ introductory activities, face-to-face tutorials, and using more emotionally-rich communication mediums (e.g. OU Live). These suggestions are in line with recommendations for reducing stress in online collaborative activities outlined by Allan and Lawless (2003). These authors emphasise the importance of building trust, increasing social presence, forming relationships, and creating a safe learning culture where mistakes are accepted.

Although an introductory activity is currently undertaken before the T215 group project, learner comments suggest that more emphasis needs to be placed on developing trust and relationships between group members. It has been suggested to hold dedicated 'getting to know your group', face-to-face tutorials (Lawless and Allan, 2004), which could significantly reduce anxieties related to 'unknown others'. Lawless and Allan (2004) also emphasise that learners need to understand their own, as well as others, online group working preferences (e.g. preferred communication mediums, role within group, working patterns) and this should be completed in a timely and dependable manner before the main collaborative activity begins. Further guidance and facilitation from tutors might also

be needed at this stage. This might help encourage engagement and participation as well as providing support for learners who are new to this study methodology.

The importance of emotional expression to facilitate coping with anxiety in the online project was discussed previously, and this was further highlighted by learners as an important way to help support anxious students in these learning contexts; a view supported by numerous scholars (e.g. Xu et al., 2014; Zembylas, 2008). Zembylas (2008, p.83) states that 'It is valuable for online instructors to find mechanisms that encourage learners to evaluate their positive and negative feelings alike'. Gaining information about learners emotional experiences may be of great value to tutors. For instance, uncertainties and anxieties expressed by learners could be acknowledged and, if necessary, additional help and support could be provided. If emotional expression was also shared with other learners, students may choose to offer each other emotional support as well as sharing successful coping strategies (Xu et al., 2014). These examples highlight how encouraging learners to share emotional experiences can help foster a supportive social and emotional learning climate.

In previous studies, emotional journals have been used as a way to help learners reflect on their emotions and feelings when studying online (e.g. Xu et al., 2014; Zembylas, 2008). This type of activity was not undertaken by learners in T215, but may be an appropriate mechanism for students to express their emotions during collaborative tasks. To motivate learners to complete this activity, reflection on their emotional experiences could form part of an assessment activity (Zembylas, 2008). Multiple mechanisms for emotional expression in online settings has been advocated (Zembylas, 2008). For instance, the inclusion of a forum

designed specifically for expressing feelings related to the online collaborative project may encourage learners to write self-discourses which can be viewed by other learners. Consideration of using anonymity in such a forum may encourage greater contributions from shy and less confident students. Advice and guidance on using other Web 2.0 tools (e.g. Facebook, WhatsApp) may also be of benefit. For example, one learner in this study described how her group members created a private Facebook group which helped learners discuss feelings in a safe environment. This also helped increase social presence as learners could view pictures and information about the lives of other group members.

Increased institutional support and guidance was also highlighted by students as a way of supporting anxious learners in the online collaborative project. In the T215 module, learners are provided with advice on best practices for the online collaborative project; however, it was apparent that learners would prefer this information in a much simpler and easy-to-understand format (e.g. presented in an A4-sized document or in video format). The importance of gaining advice from past students was also highlighted. Learners commented that understanding the experiences of others and viewing worked examples of previous assignments would have helped reduce worries and apprehensions at the start of the online project. Viewing a previous marked example may also help students understand the requirements of the collaborative and group marks awarded in the project; an area for which students desired more clarification. Finally, numerous learners perceived that more support and facilitation from tutors to help encourage participation of all group members would have helped lower feelings of anxiety.

6.2 Limitations

As with any research investigation, there are a number of limitations to this study. Firstly, the investigation is based on a relatively small, self-selected sample of students. This, therefore, may have led to a response bias, with a greater number of learners who had experienced anxiety responding to the online survey. Although this may have impacted upon the representativeness of the data, it was not the purpose of the study to generalise findings in this way. Second, the study only took place at one institution, using students from one module. This means that the sample, although representative of the module population, had a high percentage of male students in comparison to females. When compared to other HE institutions, the average age of the sample may have been unrepresentatively high and learners may have been more competent with ICT and familiar with online communication. Third, the interviews took place up to three months after the online group project had been completed. This could have impacted upon what each informant remembered and therefore influenced the results of the study. Last, item eight in the online survey omitted to include any positive ways in which anxiety could have impacted student participation and performance. This led to a reduced response rate on this item and a higher number of respondents selecting the 'other' response option.

6.3 Future Research

This study advances knowledge of how anxiety is experienced and perceived by students in an assessed, online, collaborative project at the UK OU. Future research is recommended in broader contexts, using a more diverse range of students. For example, this could include undertaking further research at the OU with courses from different academic disciplines and with different student

demographics. Research could also be undertaken at other distance learning institutions or in blended or traditional teaching and learning contexts. It may also be prudent to explore student anxiety in various types of online collaborative learning activities such as online problem-based learning or non-assessed collaborative group work. The use of longitudinal designs and narratives (i.e. using reflective and emotional journals) would further aid understanding of how experiences of anxiety change over time. As Lazarus (1991) notes, the study of emotion is primarily a study of change and flow over time and across occasions. Additionally, understanding tutors' perspectives of student anxiety in online collaborative learning may increase knowledge of how anxious students could be better supported. An increased understanding and knowledge of anxiety in online collaborative learning will hopefully aid learning design and help reduce the negative impacts of this emotion on learners.

7. Conclusions

The current study has explored students' perceptions and experiences of anxiety in an assessed, online, collaborative project. And has thus contributed to an increased understanding of how this emotion is manifested and how it affects learners in these environments. Results revealed that anxiety was a commonly experienced emotion amongst learners, and stemmed from the uncertainty involved in working in such contexts. Substantial individual differences were reported for the origins of this emotion, including relying on 'unknown others' to succeed, fears of negative evaluation, and worries of working with non-active group members. It was also found that many learners perceived anxiety to be greater before the project began, and gradually reduced after a number of uncertainties were resolved.

Anxiety is often viewed as a negative emotion with detrimental consequences, however, more learners perceived this emotion to have a facilitative impact than a debilitating effect on participation and performance. Although this is a novel finding, ensuring educators do not use these results to promote anxiety in online collaborative contexts is imperative. In order to cope with this emotion, students reported using more problem-focused than either emotion-focused or avoidance coping responses. The use of problem-focused coping was also linked to the facilitative properties of anxiety, whereas avoidance coping was associated with the debilitating effects of this emotion. Teaching learners a range of coping strategies may be benefit to educators in distance learning contexts, so that students can more effectively cope with this emotion in online learning contexts.

Creating a supportive social and emotional climate was perceived as important in helping alleviate feelings of anxiety in learners. Central to this was

ensuring group members get to know each other before the project begins with the aim of building relationships and trust between students. Feeling comfortable and encouraging emotional expression (student-to-student and student-to-tutor) may also be an important support mechanism that can be utilised by educators in online collaborative learning settings.

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9. Appendices

Appendix A: The Online Survey

Student perceptions and experiences of anxiety in T215 group work

Welcome!

This survey is related to feelings of anxiety when undertaking group work in T215. Understanding the experiences of both those who did experience anxiety and those who did not will be extremely beneficial to this study. The terms 'anxiety' and 'anxious' are used throughout the survey and refer to feelings of apprehension, tension or worry that may have been experienced when carrying out the group work involved in the module.

Your participation in the survey is voluntary and all of your responses will be kept confidential and anonymity will be ensured. Your decision on whether to participate or not will have no effect on any aspect of your module or university study. By taking part in this survey you are indicating that you give your permission for the data collected to be recorded and used in an anonymous form in any written reports and presentations relating to this study.

Please give your responses to the following questions and statements, using the response options provided. It would also be enormously valuable if you could enter any comments you may have in the text boxes provided below each question/statement.

If you have any technical difficulties completing this survey, please email the Quality Enhancement and Learning Analytics Survey Team: IET-Surveys@open.ac.uk.

Please click '**Next**' to continue.

Data Protection Information

The data you provide will be used for research and quality improvement purposes and the raw data will be seen and processed only by The Open University staff and its agents. This project is administered under the OU's general [data protection policy guidelines](#).

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Student perceptions and experiences of anxiety in T215 group work

How much experience did you have of working in online groups in an educational context (i.e. school, college or university) before this module?

(Please select one only)

- ☐ None
- ☐ A little
- ☐ Some
- ☐ A substantial amount

Additional comments:

I enjoyed the group work in T215:

(Please select one only)

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree
- ☐ I did not participate in the group work

Additional comments:

0% ☐ 100%

Next

Student perceptions and experiences of anxiety in T215 group work

Before starting the group project in T215...

(Please select one for each row)

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
...I felt anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I felt confident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments:

Whilst completing the group project in T215...

(Please select one for each row)

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
...I felt anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I felt confident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional comments:

0% ☐ 100%

[Back](#) [Next](#)

Student perceptions and experiences of anxiety in T215 group work

If you experienced anxiety before or during the T215 group work, what was the cause of these feelings?

(Please select all that apply)

If possible, please explain your answer in the 'Additional comments' box below.

- ☐ Posting comments on the forum
- ☐ Not knowing other group members
- ☐ Worry about making mistakes in the forum
- ☐ Worry about making mistakes in the Wiki
- ☐ Being judged by other group members
- ☐ I was afraid people would find faults in my work
- ☐ Not being in full control of my overall performance in the module
- ☐ My level of knowledge
- ☐ The amount of time that I can contribute
- ☐ Relying on others to complete the task and achieve a good mark
- ☐ Worry that I would let others down
- ☐ Other - please specify:

Additional comments:

If you experienced anxiety before or during group work in T215, what impact did these feelings have on how you participated in the group project?

(Please select one only)

If possible, please explain your answer in the 'Additional comments' box below.

- ☐ Very negative impact
- ☐ Negative impact
- ☐ Neutral
- ☐ Positive impact
- ☐ Very positive impact
- ☐ I did not experience anxiety

Additional comments:

If you experienced anxiety before or during group work in T215, what was the impact of these feelings on how well you achieved in the T215 group project?

(Please select one only)

If possible, please explain your answer in the 'Additional comments' box below.

- ☐ Very negative impact
- ☐ Negative impact
- ☐ Neutral
- ☐ Positive impact
- ☐ Very positive impact
- ☐ I did not experience anxiety

Additional comments:

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[Back](#) [Next](#)

Student perceptions and experiences of anxiety in T215 group work

In what ways did feelings of anxiety affect your participation and achievement in the T215 group project?

(Please select all that apply)

If possible, please explain your answer in the 'Additional comments' box below.

- ☐ I didn't post as much in the forums as some of the others in my group
- ☐ I didn't feel I could express my opinion
- ☐ I didn't try as hard
- ☐ I responded to suggestions made by others in the forums but didn't initiate discussions
- ☐ I didn't feel I could comment fully on other people's work
- ☐ I only took on tasks that I was fully confident with
- ☐ I did not contribute to the tasks as much as others in my group
- ☐ I felt my mark was lower
- ☐ Other - please specify:

Additional comments:

Do you think other students in your group were anxious when completing the online group work in the T215 module?

(Please select one only)

- ☐ Yes
- ☐ No
- ☐ Not sure
- ☐ Prefer not to say

Additional comments:

What impact did feelings of anxiety, for either yourself or other group members, have on how well the group collaborated and worked together?

(Please select one only)

If possible, please explain your answer in the 'Additional comments' box below.

- ☐ Very negative impact
- ☐ Negative impact
- ☐ Neutral
- ☐ Positive impact
- ☐ Very positive impact
- ☐ Unsure

Additional comments:

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[Back](#) [Next](#)

Student perceptions and experiences of anxiety in T215 group work

I have experienced feelings of anxiety previously when completing face-to-face group work in an educational context (i.e. at school, college or university).

(Please select one only)

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree
- ☐ Have not undertaken face-to-face group work in an educational context

Additional comments:

After completing the group work in T215, I am less anxious about taking part in future online group work in an educational context.

(Please select one only)

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

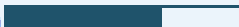
Additional comments:

After completing the group work in T215, I am more confident in my ability to successfully complete future online group work in an educational context.

(Please select one only)

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

Additional comments:

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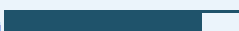
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How could have the Open University offered more advice and guidance to help you feel less anxious and more confident when completing online group work?

Would you be willing to take part in a telephone or Skype interview to further discuss your experiences of anxiety in online group work?

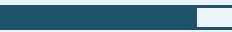
The interview should last between 30-45 minutes and can be completed at a convenient time for you. As a thank you for doing so, you will receive an £20 Amazon voucher.

- ☐ Yes, I agree to be contacted about taking part in an interview
- ☐ No, I would not be willing to take part

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Thank you, please provide your email address below:

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If you have experienced anxiety during the group work of T215 or whilst studying at the Open University and would like advice and support on how to cope with this emotion, please see the links below:


[Wellbeing and mindfulness OU](#)

[External sources of information and support OU](#)

[Resources on anxiety from the charity Mind](#)

Thank you for completing the survey, we really appreciate you taking the time.

Please click the 'Next' button below to submit your responses, you will then be directed to The Open University's StudentHome website.

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Appendix B: The Interview Guide

Interview Guide

Purpose: The purpose of this interview is to gather data for a research project focusing on student perceptions and experiences of anxiety in online collaborative learning. You can have a copy of the final study upon request.

Recording: This is required to make sure all information is collected accurately and so that a transcript can be produced. You will be sent a copy of the transcript to ensure it is accurate.

Confidentiality: Anonymity will be ensured throughout the transcript; quotes from the transcript may be used but all identifiable factors will be removed or changed. You will have the right to withdraw from the interview at any time, and not answer any particular questions. The last section of the interview will allow you the opportunity to comment on the interview and interview process.

Section 1: Introduction

Orienting instructions: Questions will be based on your experiences of anxiety in online group work and will cover similar topics to questions and statements that were in the online survey. If you are not sure of anything please let me know.

Defining Anxiety. Throughout the interview, the terms 'anxiety' and 'anxious' will refer to feelings of apprehension, tension or worry that may be experienced when completing online group work.

Do you have any questions at this point in time? Are you happy to start?

Section 2: Context

1. Did you enjoy the group work involved in the module?
Probe: Why? Were you confident in doing well in the group work?
2. Have you ever completed online group work in an educational context before (i.e. in school, college or university)?
Probe: Where? When? What was involved?

Section 3: Reasons for anxiety

3. Briefly, could you explain your feelings of anxiety when taking part in the T215 online group activity?
Probe: Have you ever felt feelings of anxiety in previous online group work in an educational context (i.e. school, college or university)?
4. When did you experience anxious feelings related to the group work in T215? (i.e. when you first found out you were

going to take part in group work in T215, when you started the group work, near the completion of the group work)

Probe: When were feelings strongest? Did feelings reduce throughout the completion of the group work?

5. What were the reasons for you feeling anxious when completing T215?

Probe: [probe on areas highlighted in survey] Why did these reasons make you anxious?

6. How did your feelings of anxiety impact your engagement and participation in the online group work involved in the T215 module?

Probe: Do you think it had positive or negative impact on your participation and engagement? Or no impact at all? Why do you think this? [probe areas highlighted in survey – also positive areas].

7. Do you think that these feelings affected how you performed/achieved and how much you learnt in the T215 group project?

Probe: Again, was there a positive or negative impact? Or no impact at all? Why do you think this? [probe areas highlighted in survey – also positive areas].

**Section 4:
Impact of
anxiety on
engagement,
participation
and
performance**

**Section 5:
Coping with
anxiety**

8. How did you cope with your feelings of anxiety?

Probe: Did you employ any strategies? Did these help improve your feelings of anxiety?

**Section 6:
Anxiety in
future online
group work**

9. After completing the T215 group work, do you think that your feelings of anxiety related to online group work have changed?

Probe: Why? Do you think these feelings will be reduced in future online group work?

**Section 7:
Support for
anxious
students
during OCL**

10. How could have the Open University offered more advice and guidance to help you feel less anxious and more confident when completing online group work?

Probe: Are there any strategies that could be put in place to support anxious students?

**Section 8:
Conclusion**

11. Is there anything else you would like to add?

Thank you for your time and efforts in participating in this study and this interview.

Appendix C: Invitation Email to Online Survey

Survey of student perceptions and experiences of anxiety in T215 group work

Dear \${m://FirstName},

My name is Helen Donelan and I am the Chair of T215. I am currently supervising a postgraduate research student, Jake Hilliard, in the Learning and Teaching Innovation Portfolio at the Open University. We would like to invite you to take part in a short survey about whether you experienced anxiety when undertaking group work in T215. Anxiety is an emotion which is characterised by feelings of apprehension, tension or worry.

Understanding the experiences of both those who did experience anxiety and those who did not will be extremely beneficial to this study. We hope you will also benefit from the opportunity to share with us your views and experiences. Your responses combined with those of others will help inform the Open University and other institutions about how anxiety may impact individuals in online group tasks.

Your participation in the survey is voluntary and all of your responses will be kept confidential and anonymity will be ensured. Your decision on whether to participate or not will have no effect on any aspect of your module or university study. By taking part in this survey you are indicating that you give your permission for the data collected to be recorded and used in an anonymous form in any written reports and presentations relating to this study.

At the end of the survey, you will be invited to take part in an interview to further discuss your experiences of anxiety in online group work. This will be completed over the telephone or on Skype, at a convenient time for you (during April or May), and should last around 30-45 minutes. If you agree to take part, and are selected for interview, you will receive an email providing further information. As a thank you for taking part in this interview you will receive a £20 Amazon voucher.

Your participation in this research project would be very much appreciated and hopefully beneficial for future presentations of T215 and other OU modules.

Please click on the link below to begin the survey. The survey is very brief and should take no longer than 5-10 minutes to complete.

[\\${l://SurveyLink?d=To access the survey, please click here.}](#)

Or copy and paste the URL below into your internet browser:

[\\${l://SurveyURL}](#)

If you have any comments or questions, please feel free to email me at helen.donelan@open.ac.uk. Advice and support on how to cope with anxiety can also be found in the links provided below:

[Wellbeing and mindfulness OU](#)

[External sources of information and support OU](#)

[Mind Anxiety and panic attacks](#)

If you have any technical difficulties accessing or completing the survey, please email the Quality Enhancement and Learning Analytics Survey Team: IET-Surveys@open.ac.uk or telephone them on +44 (0)1908 652422/3.

With thanks in anticipation,

Helen Donelan,
The Open University

Appendix D: Reminder Invitation Email to Online Survey

Survey of student perceptions and experiences of anxiety in T215 group work

Dear \${m://FirstName},

Recently I sent you an email inviting you to take part in a short survey asking you questions about experiences of anxiety when undertaking group work in T215. This will form part of a research project being undertaken by Jake Hilliard, a postgraduate research student that I am currently supervising. Anxiety is an emotion and is characterised by feelings of apprehension, tension or worry. Gaining as much information from both those who experienced anxiety and those who did not will be extremely beneficial to this study. We hope you will also benefit from the opportunity to share with us your views and experiences.

Please take time to consider helping with this important research.

Your participation is voluntary and the survey is strictly confidential and anonymous.

At the end of the survey, you will be invited to take part in an interview to further discuss your experiences of anxiety in online group work. As a thank you for taking part in this aspect of the research project you will receive a £20 Amazon voucher.

Please click the link below to begin the survey. The survey is very brief and should take no longer than 5-10 minutes to complete.

[\\${l://SurveyLink?d=To access the survey, please click here.}](#)

Or copy and paste the URL below into your internet browser:

[\\${l://SurveyURL}](#)

Your responses would be very much appreciated and will hopefully be beneficial for future presentations of T215 and other modules.

If you have any comments or questions, please feel free to email me at helen.donelan@open.ac.uk. Advice and support on how to cope with anxiety can also be found in the links provided below:

[Wellbeing and mindfulness OU](#)

[External sources of information and support OU](#)

[Mind Anxiety and panic attacks](#)

If you have any technical difficulties accessing or completing the survey, please email the Quality Enhancement and Learning Analytics Survey Team: IET-Surveys@open.ac.uk or telephone them on +44 (0)1908 652422/3.

With thanks in anticipation,

Helen Donelan,
The Open University

Appendix E: Demographic Data of the Students Registered at the Start of the T215 Module and Survey Respondents.

	Students registered at the start of the T215 module (422 students)	Survey respondents (76 students)
Gender		
Male	322 (76.3%)	61 (80.3%)
Female	99 (24.5%)	15 (19.7%)
Unknown	1 (0.2%)	0 (0.0%)
Age range		
≤21 years	25 (5.9%)	0 (0.0%)
22-24 years	37 (8.8%)	6 (7.9%)
25-29 years	84 (19.9%)	17 (22.4%)
30-39 years	158 (37.4%)	24 (31.6%)
40-49 years	88 (20.9%)	18 (23.7%)
50-59 years	19 (4.5%)	8 (10.5%)
60-64 years	3 (0.7%)	1 (1.3%)
≥ 65 years	8 (1.9%)	2 (2.6%)

Appendix F: Sampling Criteria for Interviews

To be sent an invitation to interview, survey respondents who had expressed their willingness to participate had to meet one of the follow criteria:

- 1) Selected either '*Strongly agree*' or '*Agree*' to feeling anxious before and/or during the online collaborative project (items 3 and 4).

or

- 2) Selected '*Neither agree nor disagree*' to feeling anxious before and during the online collaborative project (items 3 and 4) but indicated feeling anxious in other quantitative items or in qualitative comments.

or

- 3) Selected '*Neither agree nor disagree*' to either feeling anxious before or during the online collaborative project (items 3 and 4) and '*Strongly disagree*' or '*Disagree*' to either feeling anxious before or during the online collaborative project (items 3 and 4), but indicated feeling anxious in other quantitative items or in qualitative comments.

From the 40 survey respondents who expressed their willingness to take part in an interview, 30 met one of the above criteria and were sent an invitation email.

Appendix G: Invitation Email to Interview

Interview about student experiences of anxiety in online group work

Dear T215 student,

I would like to thank you for agreeing to take part in an interview about your experiences of anxiety when completing group work in the T215 module.

The interview is aimed at gaining a more detailed account of the reasons anxiety was experienced and what impact this had on engagement, participation and performance in the T215 group work. It will also explore how anxiety manifested itself and what coping strategies were employed to deal with this emotion.

The interview will be completed over the phone or Skype and should last around 30-45 minutes. To ensure that all of the information is collected accurately the interview will be recorded and a transcription will be produced. You will be sent a copy of the transcript to make sure all of the information is correct. Similar to the survey, the interview is strictly confidential and anonymous. You will also have the right to withdraw from the interview at any time, and not answer any particular questions.

I have attached a consent form for the interview to this email and if you are still happy to participate please complete and return this to jake.hilliard@open.ac.uk. Completion of this form indicates that you understand the purpose of the research, are willing to take part and understand that data collected will be in an anonymous form in any written reports, papers or presentations related to this study.

When returning the consent form, please also indicate any dates and times that would be suitable for the interview to take place.

As mentioned in the survey, you will receive a £20 Amazon voucher as a thank you for taking part in this phase of the research project.

If you have any comments or questions, please feel free to contact me on the email address provided above.

Sincerely,

Jake Hilliard
Postgraduate Research Student
The Open University

Appendix H: Student Consent Form

Student Interview Consent Form

Further analysis of students' perceptions and experiences of anxiety in online collaborative learning

If you are willing to take part in this research project (as explained in the covering email) please tick the box, complete the details below and return the signed form.

At any time during the research you are free to withdraw and to request the destruction of any data that have been gathered from you, up to the point at which data are aggregated for analysis.

Your participation or non-participation will not affect your access to tutorial support or the results of your assessments.

The results of any research project involving Open University students constitute personal data under the Data Protection Act.



I am willing to take part in this research, and I give my permission for the data collected to be used in an anonymous form in any written reports, presentations and published papers relating to this study. My written consent will be sought separately before any identifiable data are used in such dissemination.



Please provide your contact details below so that we can arrange a time and date for this interview:

Name: _____

Student PI: _____

Contact Telephone No: _____

Contact Email Address: _____

Signing this form indicates that you understand the purpose of the research, as explained in the covering email, and accept the conditions for handling the data you provide. In returning the form by email you confirm that you are the person to whom the invitation to participate in the research was sent. Please note that as part of the electronic confirmation process you must return the consent form from the email address to which it was sent; the contact email address which you supplied to The Open University.

Signature: _____

Date of Signature: _____

Please return completed form to: jake.hilliard@open.ac.uk

Appendix I: Informant Details⁶

<i>Informant</i>	<i>Gender</i>	<i>Age Range (years)</i>	<i>How much experience did you have of working in online groups in an educational context?</i>	<i>I enjoyed the group work in T215</i>	<i>Before starting the group project in T215 I felt anxious</i>	<i>Whilst completing the group project in T215 I felt anxious</i>	<i>If you experience anxiety before and during group work in T215, what impact did these feelings have on how you participated in the group project?</i>	<i>If you experience anxiety before and during group work in T215, what impact did these feelings have on how you achieved in the group project?</i>
A	Male	25-29	A substantial amount	Agree	Agree	Agree	Neutral	Positive impact
B	Male	50-59	None	Strongly disagree	Strongly agree	Strongly agree	Negative impact	Neutral
C	Male	50-59	A little	Disagree	Neither agree nor disagree	Neither agree nor disagree	Positive impact	Positive impact
D	Male	30-39	None	Agree	Agree	Disagree	Positive impact	Positive impact
E	Male	22-24	None	Strongly agree	Agree	Disagree	Positive impact	Positive impact
F	Male	30-39	None	Agree	Neither agree nor disagree	Neither agree nor disagree	Positive impact	Neutral
G	Male	30-39	None	Neither agree nor disagree	Agree	Neither agree nor disagree	Negative impact	Neutral
H	Female	50-59	None	Agree	Strongly agree	Neither agree nor disagree	I did not experience anxiety	I did not experience anxiety
I	Male	40-49	None	Strongly agree	Strongly agree	Neither agree nor disagree	Very negative impact	Very negative impact
J	Male	30-39	None	Neither agree nor disagree	Agree	Agree	Neutral	Neutral
K	Male	50-59	A little	Strongly agree	Agree	Agree	Negative impact	Negative impact

⁶ Information gained during online survey.

Appendix J: Sample Interview Transcript

B – REASONS FOR ANXIETY

INTERVIEWER

The next section looks at reasons for anxiety, again this predominately relates to the T215 group module, but it might factor in other experiences in group work as well.

Could you briefly explain your feelings of anxiety when you took part in the group work in T215?

INFORMANT 2

One of the things that appealed to me initially about The Open University was the fact it was very insular and you don't really get involved with other students all that much. I know there are classes that you can go to, but I sort of try not to avoid those and not to be involved with other students and to work on my own path. I am doing an Open Degree, so I am mix and match what I am doing, so I think other people on the course are more down the ICT route than I was and they have probably got a background in that area, mines all, I work as a Business Analysis/Data Analysis at work, so I have got a bit of knowledge, but not a great deal of the actual technical ability that some of them have got and I was a bit wary of putting my opinions and thoughts across thinking that they would obviously have more input than me, more, what is the word I am looking for here, pertinent to the course I suppose.

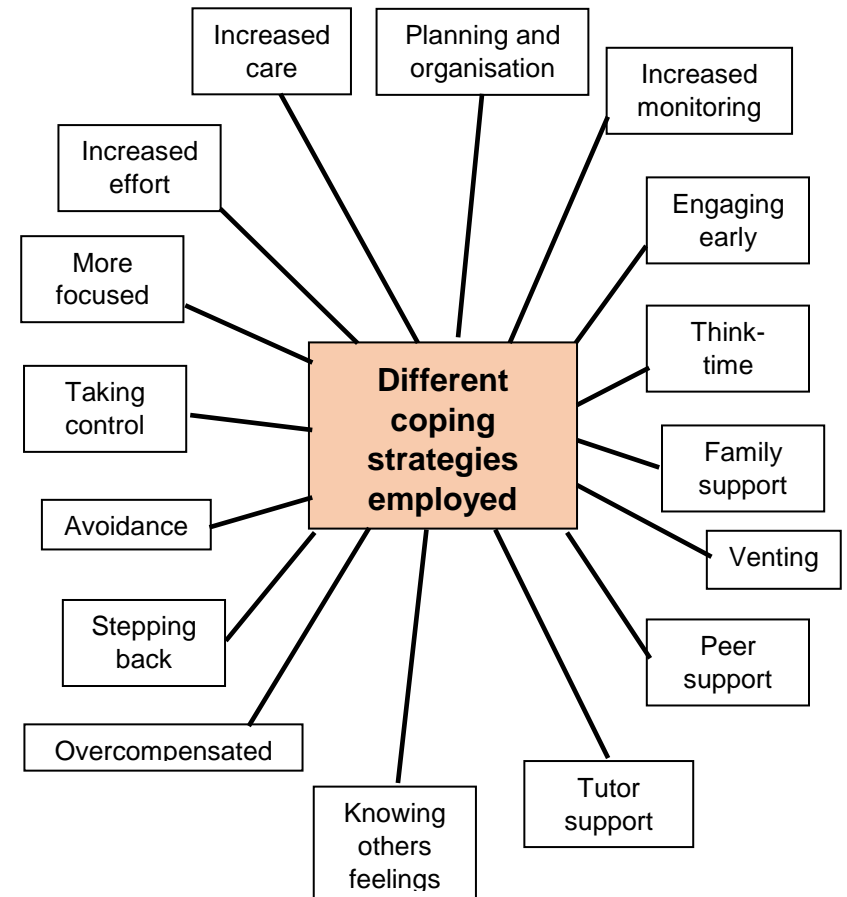
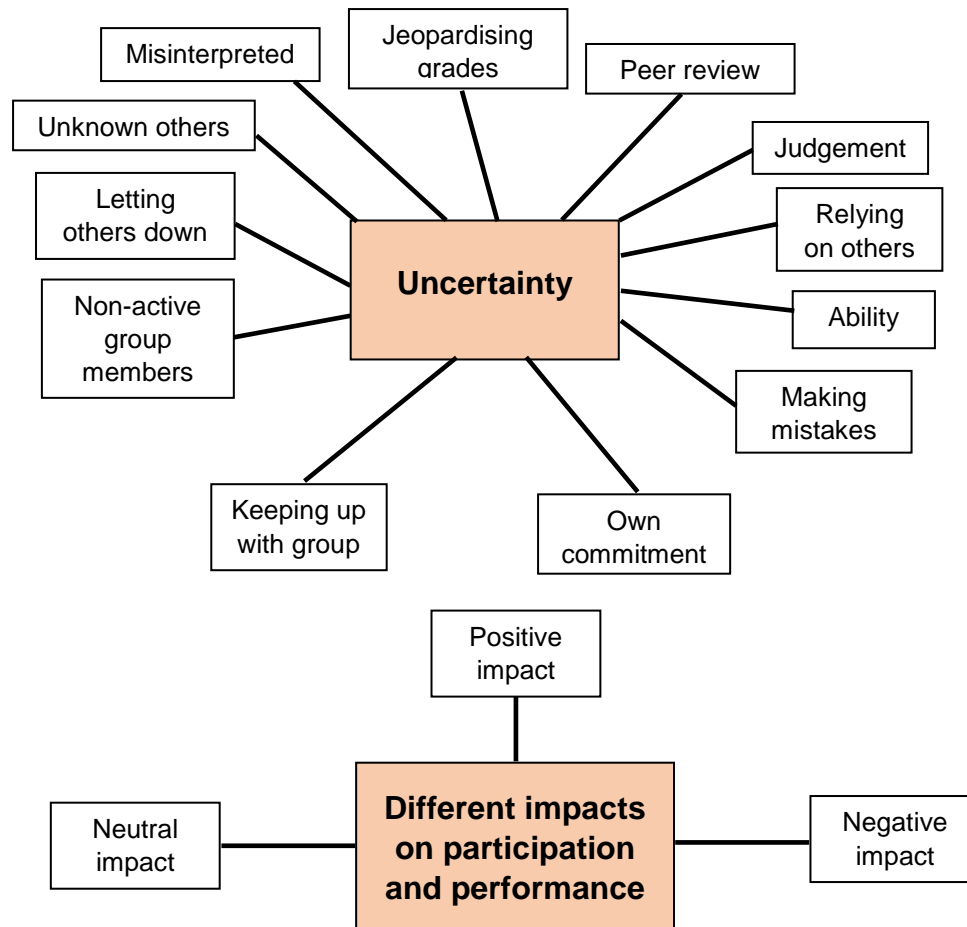
INTERVIEWER

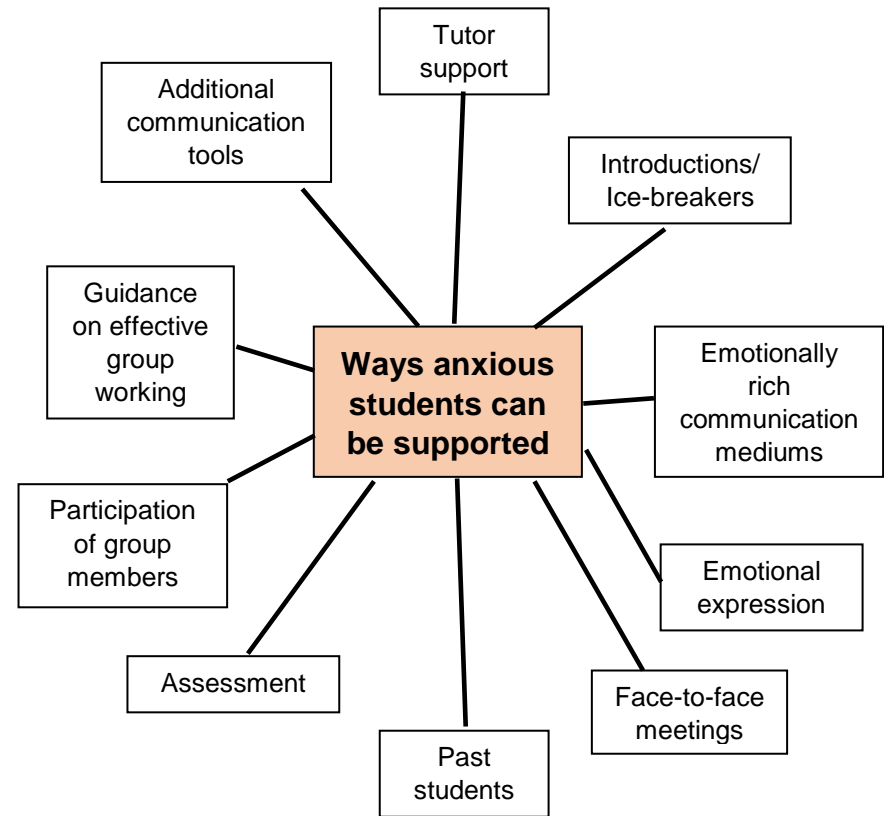
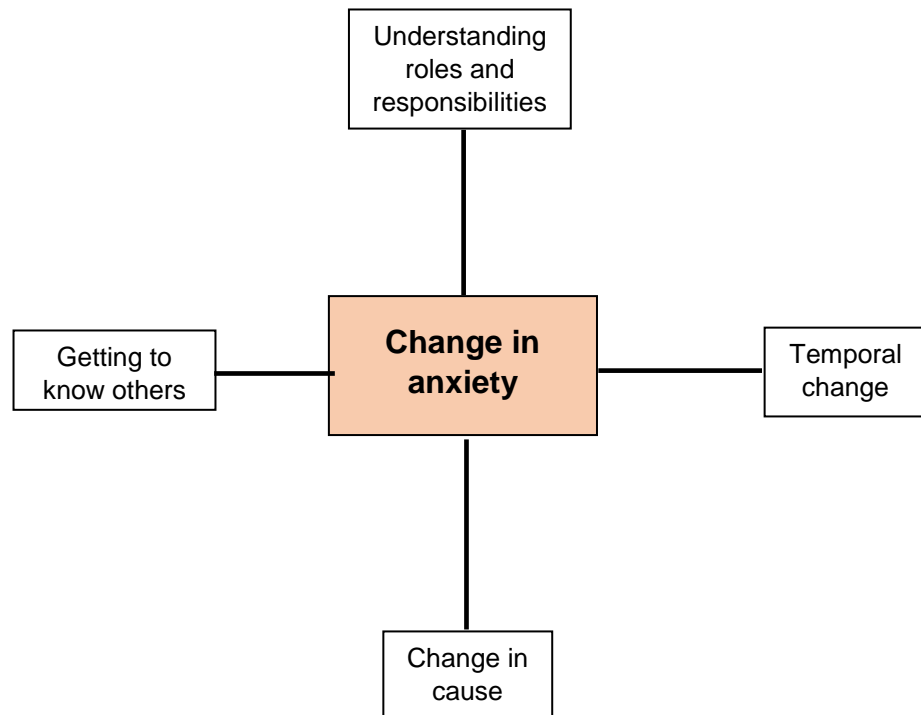
I was just wondering, you kind of mentioned about the time periods you were feeling anxious. You said you were feeling anxious at the start and then at the end, was there a time when you were feeling more anxious or less anxious?

INFORMANT 2

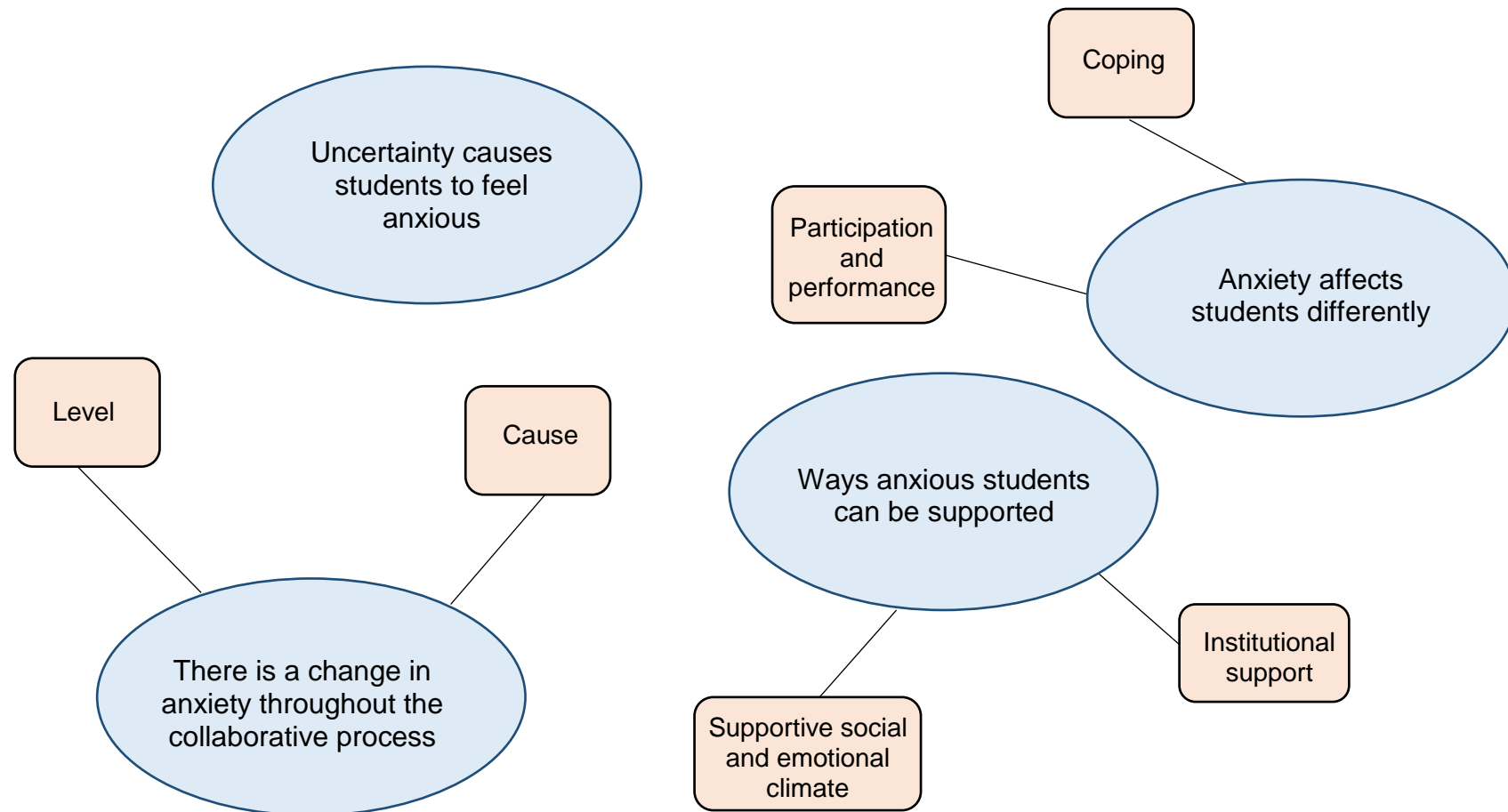
Um, yes I tried to put that to the back of my mind and I tried to get in early with my introduction on the module and so on to the other students and group and I even suggested a face to face meeting at one point and a couple of them initially were quite happy with that and that made me feel less anxious and more sort of supported by the others around me, but then they backed off and that never actually happened in the end, so that initially that made me feel less anxious.

Appendix K: Initial Thematic Map (codes and initial themes)





Appendix L: Final Thematic Map (themes and sub-themes)



Appendix M: Human Research Ethics Committee (HREC)

Approval



From Dr Louise Westmarland
Chair, The Open University Human Research Ethics Committee
Email Louise.westmarland@open.ac.uk
Extension 32462

To Jake Hilliard IET

Subject Students' experiences and perceptions of anxiety in online

Ref collaborative learning (OCL)
HREC 2017 2479 Hilliard
AMS (Red)
Submitted 26/01/2017
Date 31/01/2017

Memorandum

This memorandum is to confirm that the research protocol for the above-named research project, as submitted for ethics review, has been given a favourable opinion by the Open University Human Research Ethics Committee by Chair's action as it is thought to be low risk. Please note that the OU research ethics review procedures are fully compliant with the majority of grant awarding bodies and their Frameworks for Research Ethics.

Please make sure that any question(s) relating to your application and approval are sent to Research-REC-Review@open.ac.uk quoting the HREC reference number above. We will endeavour to respond as quickly as possible so that your research is not delayed in any way.

At the conclusion of your project, by the date that you stated in your application, the Committee would like to receive a summary report on the progress of this project, any ethical issues that have arisen and how they have been dealt with.

Kind regards,

Dr Louise Westmarland

Chair OU HREC

Appendix N: Transcriptionist Confidentiality Agreement



Confidentiality Agreement

Transcriptionist

I (the transcriptionist) agree to maintain full confidentiality in regards to all audio-recorded interviews received from Jake Hilliard in relation to his research study titled: Students' perceptions and experiences of anxiety in online collaborative learning.

Furthermore, I agree to:

1. Hold the strictest confidence if the identification of any individual may be inadvertently revealed during the transcription of recorded interviews.
2. Store all files related to this study in a safe, secure location as long as they are in my possession.
3. Delete all electronic files related to this study from my computer hard drive and any back-up devices after all work has been completed.

Name: _____

Signature: _____

Date of Signature: _____

Please return completed form to: jake.hilliard@open.ac.uk

Appendix O: Ways in Which Anxiety Impacted Participation and Performance: 'Other' Comments

Respondent	'Other' Comment
7, Male, 22-24 years	'Nothing'
12, Male, 25-29 years	'I think it made me want to take on a bigger role'
15, Male, 40-49 years	'I was permanently frustrated by others'
20, Male, 30-39 years	'Once the work started the anxiety faded'
22, Male, 40-49 years	I tried harder to get responses and work from my fellow students'
28, Male, 30-39 years	'I contributed more'
32, Male, 30-39 years	'Overcompensated'
35, Female, 30-39 years	I took a lot of time over what I was posting in the forum to try and ensure I did not say the wrong thing and inadvertently cause offence'
37, Male, 40-49 years	'Looked for corrective methods – see comment'
39, Female, 50-59 years	'No impact'
43, Female, 40-49 years	'Nervous about posting comments and work'
46, Male, 40-49 years	I did try to cover up my anxiety by getting involved with everything I could'
47, Female, 40-49 years	'See below'
53, Male, 50-59 years	'Despite feeling anxious, I felt my contributions were of a good standard'
54, Male, 50-59 years	'I was very uncertain about the outcome of the project'
59, Male, 30-39 years	'I did not experience anxiety/
67, Male, 40-49 years	'My worries made me to contribute and be more active, for not letting others down'
68, Male, 50-59 years	It made me try harder and attempt to engage more with fellow students'
74, Male, 40-49 years	'I pushed myself harder'
75, Male, 40-49 years	'I proactively initiated conversations and tasks'

